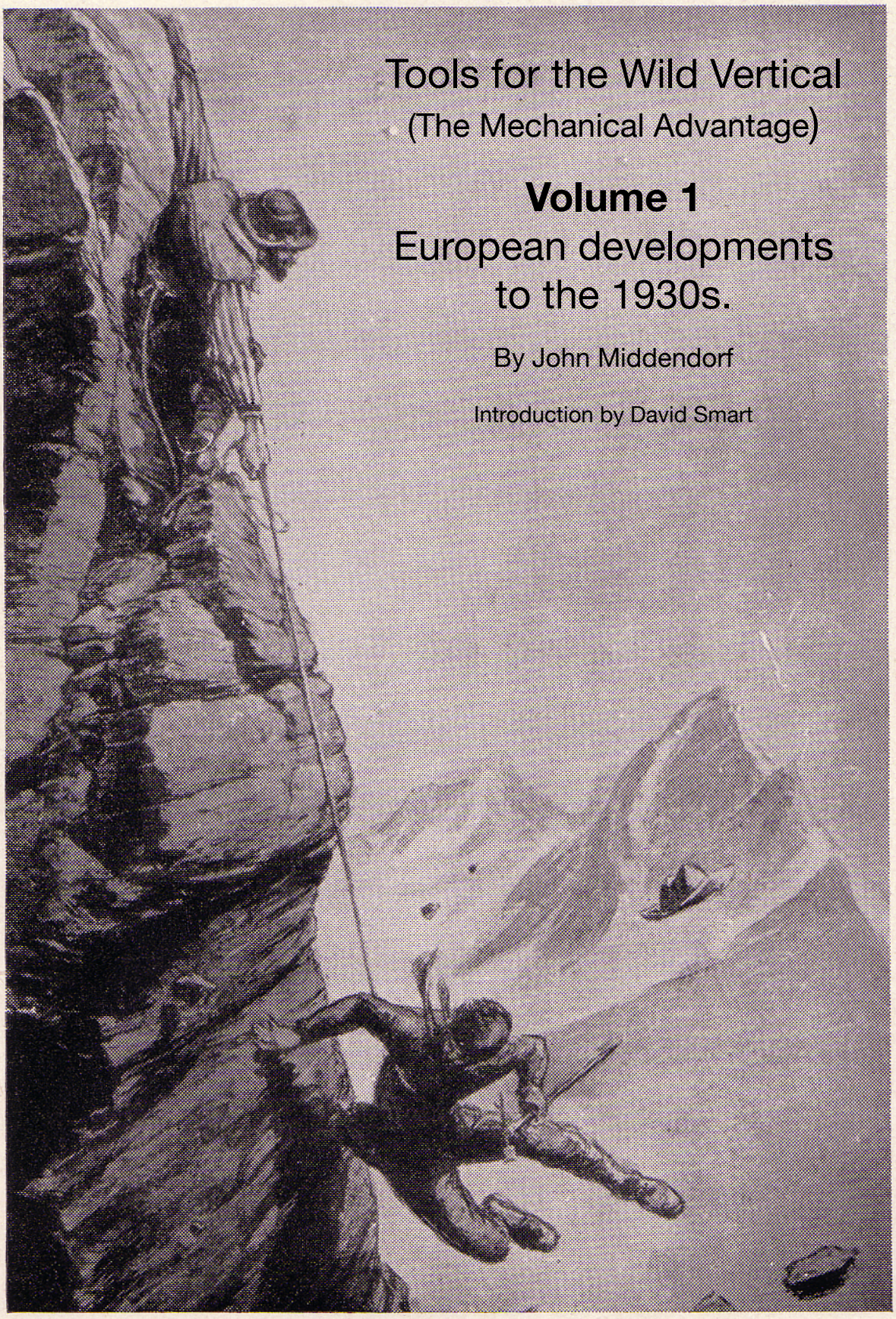

Tools for the Wild Vertical

(The Mechanical Advantage)

Volume 1

European developments to the 1930s.

By John Middendorf

Introduction by David Smart

Introduction by David Smart

As a teenager, I was more thrilled by photographs of climbers bent under racks of pitons on El Capitan's Pacific Ocean Wall than I had been when I watched astronauts on television. Never especially technical, I failed shop in High School and a climbing friend nicknamed me Wile E. Coyote for my chancy ropework. A new El Capitan route was never really within my grasp. Lacking real technical knowledge, I invested the little selection of wired and perlon-strung nuts with an almost fetishistic power and took them out to look at them mid-week to remind me of my dreams. As Middendorf's research into the culture and history of climbers and the tools they created, borrowed or stole shows, our tools, far from merely being expedients to an end, form our desires.

As an engineer and designer of advanced big wall equipment, as well as a veteran of both new El Capitan routes and the only ascent at time of writing of Great Trango Tower, the world's highest big wall, Middendorf knows that the discussion of tools must be granular to be accurate. His curiosity and eye for connections and detail do justice to the role climbing played in our history not just as a recreationalists, but as humans.

A million years ago, our primate ancestors evolved to be able to climb the cliffs of east Africa. A hundred thousand years ago, paleolithic climbers were so skilled that they could scale technical crack climbs in the darkness of caves. Great religions were forged on desert rock walls. The climb became a metaphor for everything worthwhile. It is natural that we brought our abilities to use tools along with us, so understanding them, and the needs they were created for and the possibilities they in turn created is by no means a trivial sideshow to the big picture of history.

At the dawn of a new millennium, climbers scale the steepest and most forbidding rocks and frozen walls on the planet, proving that humans have become the greatest of all climbing species. Climbers, however, were never mostly athletes. They were agricultural workers, soldiers, monks, miners, explorers, stoneworkers, guides, chimney sweeps, thieves, stoneworkers, hungry peasants, gymnasts, bandits, construction workers, curious scholars, rebels, who climbed for food, work, spirituality, art, status, politics, pay cheques, cheap thrills, and ultimately, because they could not stop themselves. Middendorf shows that the objectives and means of climbing, from caves, to railways, to cliffs and mountains, endlessly overlap.

Both stated and apparent motivations to climb have changed over time more than the act itself, but there are continuities. Worker climbers have always exceeded the practical demands of their climbing tasks. When there were no climbing tasks, humans climbed anyway. Here you will find layers of technology, politics, work, urban and alpine walls, and sport formed by different traditions. For millions of urbanites for whom for whom mountains weren't inaccessible, buildings, humanity's attempt to rival nature's constructions, sufficed. Millions now only climb on purpose-built indoor climbing walls. Tool-building to help with climbing tasks was as inevitable as it was continuous. Discussions about limiting the use of tools only prove their ubiquity.

Middendorf's engagement of the industrial roots and expressions of climbing is welcome. A popular canard counterposes economic climbs against those of sport, and not just any notion of sport but the Victorian British model, and states that these climbs are irrelevant, or simply encoded by hunger or political aspiration or religious belief. Whether climbing is a function of, or recreation from work, a religious or aesthetic plea or a reaction against society, it is always, in some ways, tied to material needs or the economic processes that fulfil them. Perhaps if it were not, we never would have evolved to climb in the first place.

And yet, that is not the whole story. Whenever there's unrest or trouble, people move upwards. When they dream of resistance, the cliffs and mountains become both symbols and resorts offering freedom. To find knowledge, enlightenment is to rise, to ascend, to peak. To develop tools to aid us in this quest is as natural as the impulse to climb in the first place. -- *David Smart, author of Emilio Comici, Angel of the Dolomites, and Paul Preuss, Lord of the Abyss.*

Foreword

Climbing Styles since 1900.
This “Mechanical Advantage” series is primarily about the evolving tools of climbing: why tools were invented, and how they were used. One tricky aspect is the varied nation-centric viewpoints of the primary sources. It is the recurring “Who invented the light bulb/radio/television/etc?” sort of thing, with simultaneous development in many cases, and sometimes a lack of shared information or the vision to comprehend advantages, such as a three-decade delay in the wider development of hooking pitons, from their initial invention in the 1950s by Jaromir Šádek in Czechoslovakia to when the Birdbeak piton began being produced and used in the USA starting in the late 1980s.

How novel ideas circulate and permeate in society is interesting in itself, but often unraveling the stories lead to right/left political dogma and there are few historians offering a broader middle-path perspective[1] (footnote); the bias becomes readily apparent in the primary journals from different cultures when examined from a global context.

One of the most interesting periods of climbing tool development occurred on the steep rock of the Eastern and Western Alps during the early decades of the 20th century, when war, pandemics, and economic depressions were all rife. Climbing history, like all histories, often becomes tainted by the larger social issues, so it takes time to understand the context and thus the impact of innovations in climbing.

The more interesting discussion of climbing styles over the past two centuries is a repeating one:

“How to recognize and acknowledge the changing methods and means?”

In the early 1900s, we will consider some of the opposing views in the development and use of the piton—a time when Tita Piaz and others led new levels of hard protected free climbing, a style initially disdained for its ample use of pitons but eventually proving to be the most sensible means of pushing new boundaries of the art of climbing vertical walls. Only later, once the marriage of tools and techniques is more firmly established, are the style and proponents fully recognized, such as the case of Fiechtl and Herzog being widely acknowledged as the innovators of the piton and carabiner.

The same general scenario repeats itself for the next 100 years, sometimes with resistance and sometimes with acceptance: for example, in the 1930s, when extensive aid and bolts came into play, and in the 1970s, when a peaceful transition to clean climbing style swiftly arose, a time when nearly everyone appreciated and embraced the challenges brought on by the new tools.

Among all the controversies in between and since about changing styles, I can relate to the one I witnessed first hand, living in Yosemite Valley in the mid-’80s when the old guard’s one primary rule: “ground-up climbing only” fell to the proponents of yet another new style of climbing, originating in the limestone cliffs of the Verdon, where no other means was possible to advance the sport was possible without recourse to extensive and complex rope work in a canyon deeper than the longest ropes (or, as Patrick Edlinger and Alain Robert have so elegantly demonstrated, with beautiful free-solo performances). The real argument in climbing styles often revolves not about the number of pitons, bolts, use of the rope, and other aids (the change in means), but more importantly, the change in the potential of new climbs and adventures. In other words, it is the answer to the question of whether a particular style in a particular area has been “played out” or not within the area’s vertical resources. I will probably write more about my observations of this phenomena as well as relate some of my own experiences in future volumes.

The “Mechanical Advantage” series is more about visionary lines made possible with the development of new ideas and tinkering, with a sharp focus on inspiring climbs involving an elegant marriage of tools, techniques, and human ability.

John Middendorf, Hobart Australia 2021

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[1] Such as seen even in the climbing literature during the rise of fascism in Germany in response to its defeat in WWI, a Thucydides' Trap war caused by the Austro-Hungarian empire’s dwindling power and eventual collapse, resulting in great change for the entire region: the end of the age of Kingdoms, replaced with new social controls by new powers.

Author Note: *My first ever climbing story was about a time when I almost froze to death halfway up a massive cliff of granite. I was still shivering uncontrollably from the three days of hypothermic conditions, and wrapped in borrowed sleeping bags inside of an uninsulated VW Van in the Pines campground in Yosemite. The Yosemite rescue team, of which I was a member and had just helped saved my life, had been moved to the colder Pines campground that winter, while the Park Service demolished campground toilets in Camp 4. Unlike Camp 4 (also called Sunnyside because it gets all the morning warmth from the sun), the Pines is more shaded by the surrounding massive cliffs, so I was dreading the early morning routine of getting ready for the day in the cold misty morning to come.*

That night, unable to sleep even though I was thoroughly exhausted, I wrote and wrote pages about the experience of the past week on yellow ruled paper, how Mike Corbett, Steve Bosque, and I joined up to climb the south wall of Half Dome, trying to adjust to the reality of not being up there fighting for my life. I couldn't process it, and could sense a cataclysmic shift in my worldview. The climbs I had been doing lately had only given me more and more confidence in my ability to fire up big routes in record time, nothing really seemed impossible. Now, shattered and so grateful for the outside help, I tried to reconcile the fact that I could not do it on my own.

The story I wrote got edited, refined, and eventually appeared in Climbing Magazine, and even featured later in a collection of top adventure epics. John Dill wrote the most straightforward account, in the 1987 Accidents in North American Mountaineering (though I could never figure out his noting of "inadequate equipment" as all our gear was latest state of the art at the time).

Since then, I have enjoyed the writing process. My first task was to document the tools and techniques I had been using and helped develop that enabled more efficient big wall climbing to happen, published in Climbing #99 and Climbing #100, and later put into a small booklet I called the "Big Wall Tech Manual". It was quite a challenge converting decades of shared climbing knowledge into a systematic written document. These days there are countless technique books, much more detailed and complete than my early work. I found immense personal satisfaction in sharing ideas.

I wrote a bit for the magazines and journals about my adventures while I was climbing, often prompted by fantastic editors like H. Adams Carter of the American Alpine Journal. But I questioned the purpose of writing and effectively promoting. Each slide show, each article, seemed to confuse me more about why I was risking my life so often in the mountains, sometimes blindly in pursuit of a dream that came from who knows where. Eventually, it all came to an end when, during plans to climb and BASE jump a new big wall route in Baffin Island (which saw me learning to skydive out of a friend's planes without an actual instructor), my friend Xaver Bongard was killed in a BASE accident off the Staubach in Switzerland. I finally realised then, fully, the impact of our borderline reckless behaviour, a mixture of personal drive and having something to "show". After that, I decided to strictly focus on design and engineering challenges, as I best felt I had something to contribute there, and did that for a while before discovering the joys of going with gravity, not against it, on the big rivers of the southwest as a Grand Canyon river guide (where I have no "claims to fame" but enjoyed every minute of it). And currently, now, where I am helping raise a family with my wife Jeni, Remi, and Rowen, and occasionally working as a high school teacher.

I really have no idea where this research will go. I was witness to some great moments in climbing history and got to know some incredible people along the way, so hopefully I can capture some of these as well; having had these glimpses are the impetus to take to the keyboard, so here goes...

Tools for the Wild Vertical

The Mechanical Advantage

Volume 1: European Climbing Tools and Techniques to the 1930s.

By John Middendorf

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This digital PDF should be easily searchable for keywords. I call this kind of research "breadcrumb research", providing direction to original sources, and hence digital links are included. Original digital scans and library resources are noted, and a future project will be to index the work and fully reference with bibliography.

There is a huge list of people who have helped me with this research, and I plan to compile the list of helpful folks as I continue with this series. In the meantime, thank you the many who have contributed to this work.

This work will be accessible on bigwall.net, so if you want to reference it, the way I have seen my other work referenced in academic papers:

J. Middendorf, "Mechanical Advantage Volume 1," 2022 [Online]. Available: http://bigwalls.net/search.html [Assessed (current date)].

In the Beginning: Subtle Means and Engines

Mechanical Advantage
Tools for the Wild Vertical

Climbing using engineered tools was first documented in 1492 when Charles VII of France ordered his military to ascend Mont Inaccessible as training for sieging feudal castles. A spectacular and sheer 300m tower flanked on all sides by precipitous limestone cliffs, it was known in the fourteenth century as one of the "Seven Miracles of Dauphiné". Local legends told of angels seen flying along its cliffs at night to keep it inviolate.
With skilled use of ropes, grappling hooks, and ladders—the "subtilz engins" (in contrast to less subtle means, ie. cannons)—combined with expert route finding ability, the military engineer Antoine deVille led a ten-person expedition to the top, where he was surprised to to discover a beautiful meadow with flowers, birds, and a herd of chamois, which he believed "would never be able to get away".

One of deVille's team described the ascent as "the most horrible passage...a half a league by a path terrible to look at, and still more terrible to descend". Now accessible by humans, the mountain was rechristened Léguille, and is now known as Mont Aiguille. After the ascent, the summit remained unvisited until 1834, when Jean-Pierre-César Liotard climbed the tower, solo and barefoot.
This first documented mountaineering ascent took place long before mountain climbing was considered recreational exploration, and even though the impetus for the ascent was political, it was a courageous, technical display of vertical prowess.

Mont Aiguille, showing approximate line of 1492 siege.

6

SUPEREMINET INVIUS

LE MONT INACCESSIBLE.

ON voit cette Montagne à ſix lieuës de Grenoble dans le Dioceſe de Die ; elle eſt d'une hauteur prodigieuſe, eſcarpée de toutes parts, & ſeparée des Montagnes voiſines, beaucoup plus étroite par le bas ; de ſorte qu'elle reſſemble de loin à une Piramide renverſée.

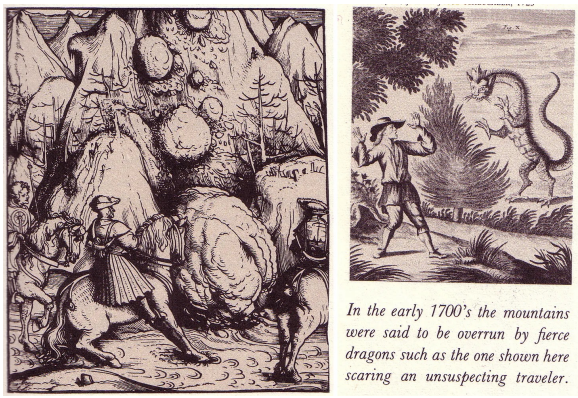
Ce Mont inacceſſible, avec ces deux mots Latins *Supereminet invius*, fait une deviſe pour le Roy. Dés les commencemens de ſon Régne, il s'eſt diſtingué de tous les autres Souverains, par une longue ſuite de victoires & par une ſageſſe admirable, il s'eſt toûjours ſoutenu pendant le Régne le plus long, & le plus glorieux qu'on ait jamais veu : il ſembloit qu'on ne pouvoit rien ajoûter à la grandeur & à la gloire du Roy, qui avoit détruit l'heréſie dans ſon Royaume, & qui avoit triomphé de toutes les Puiſſances de l'Europe liguées contre la France ; mais LOVIS le Grand, va toûjours croiſſant ; il ſe ſurpaſſe luy-même, aprés s'eſtre élevé au deſſus des autres Monarques ; il nous paroît toûjours plus grand, plus admirable, plus inimitable.

AVERTISSEMENT.

ON n'a pas prétendu de donner des deviſes régulieres ſur chacun de ces Miracles ; ny de faire une traduction éxacte des vers Latins, dans les vers François.

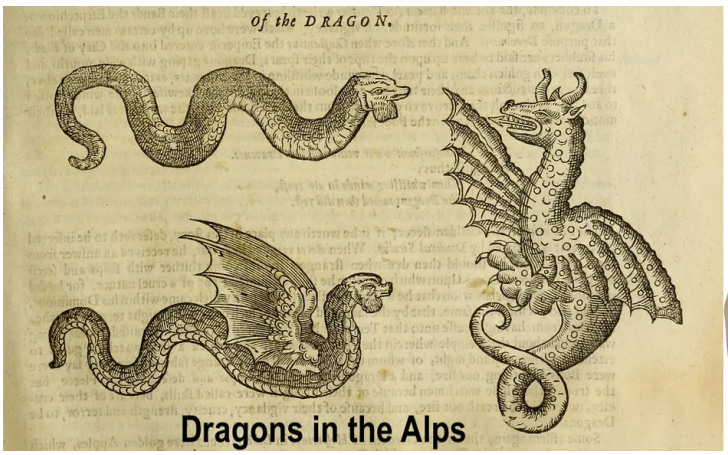
Above: early semi-imaginary bigwall climb

The year of the Mont Aiguille ascent (1492) was a pivotal time in western civilisation: early years of The Renaissance, the recent Ottoman conquest of Constantinople, and the "discovery" of the new world by Columbus. Leonardo invented, Machiavelli studied the



In the early 1700's the mountains were said to be overrun by fierce dragons such as the one shown here scaring an unsuspecting traveler.

brutal aspects of power and influence, while Erasmus wrote "In Praise of Folly", establishing the humanist view. New recorded western history began and much of old history became forgotten or ignored. For the next few hundred years after 1492, very few of high peaks were known to have been climbed, and even major passes were infrequently visited. Many believed dragons lived in the high Alps; in the early 1700's, the noted scientist Johann Jakob Scheuchzer created and published a classification system of dragon types in the Alps based on the many "eyewitness" sightings of dragons. His famous discoveries of large dinosaur fossils in the geologic layers did nothing to dispel the myths.



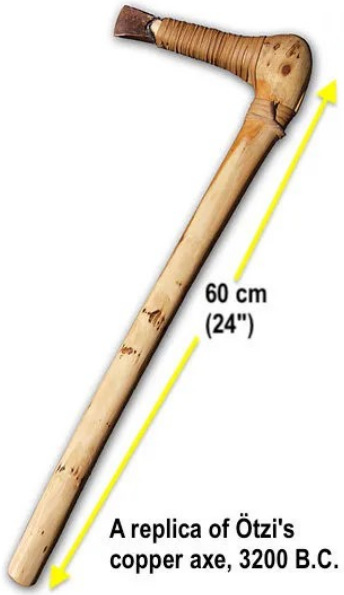
Fossil unearthed by Scheuchzer

Ötzi the Iceman

In 1991, melting glaciers revealed a mummified man on a cold and exposed 3,210m pass between Austria and Italy. 5000 years before, Ötzi the Iceman died en route, his body preserved in the ice with all his accoutrements. He carried a 60cm copper tipped axe which has often been interpreted as a weapon, but indeed would be an aid if crossing icy passes in the alps. This short ice tool could be considered the first modern short ice axe. He wore insulated clothing, and it is possible that his well made boots could be fitted with snowshoe type platforms.

BLADE TRADE Copper for Ötzi the Iceman's ax, or possibly even the finished blade, came from what's now central Italy, an unexpectedly long way from the ancient man's home region in northern Italy.

There are other artefacts evidencing the use of tools for ascent in pre-western-history. Glen Rink and I found a large wooden cam placed in a very challenging (an eight metre section of overhanging 5.9 rock climbing) crack on an Hisatsinom Grand Canyon exit route. The "Anasazi"[2] were masters of ascending slabs and overhangs using a combination of bold skill, carved steps, ladders and ropes.



Other early cultures also provide evidence of difficult ascent, and perhaps a whole book could be written on ancient archaeological climbing evidence around the world. However, the evolution of technological climbs that involve the invention and deployment of modern tools and materials and which lead to efficient and safer method of climbing big walls really began in the late 19th century, after most of the major peaks of the world were climbed or attempted.

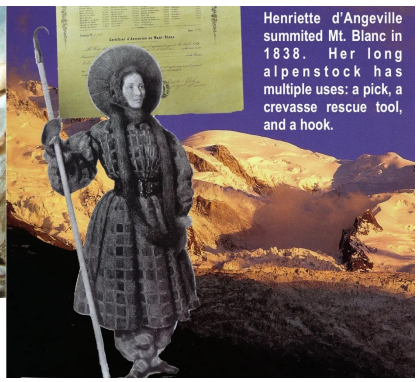
[2] *(Footnote: The Histasinom is the Hopi name for the more commonly known "Anasazi", which is thought to be a Navajo term for "ancient enemy".)*

18th Century Mountaineering

Following the 1492 ascent of Mont Aiguille, technological ascents in the mountains passed into obscurity for hundreds of years, only to re-appear in the 1700's. Often called the start of the "Modern Era" of mountaineering, unclimbed mountains became ends in themselves as people began venturing higher into the Alps. Collective knowledge of safe travel in the mountains expanded.

The state-of-the-art mountaineering tools of the 1700's were a long sturdy Alpenstock used for bridging precipices and testing crevasses (a tool used by shepherds since the Middle Ages), mid-sole spikes (an early form of the instep crampon around since the 5th century BC), and a modified wood axe for chopping steps.

Jacque Balmat with alpenstock and axe (a modified wood axe) for chopping steps in ice. -1787 ascent of Mont Blanc-

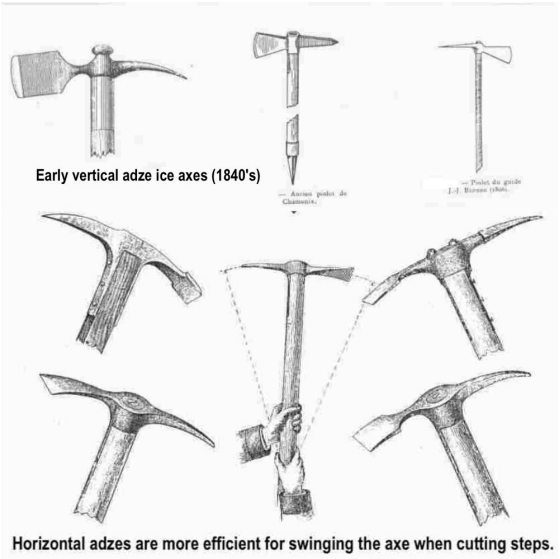


Henriette d'Angeville summited Mt. Blanc in 1838. Her long alpenstock has multiple uses: a pick, a crevasse rescue tool, and a hook.

The first ascent of Mont Blanc in 1786, the highest peak in the Alps at 4808m, required hundreds of chopped steps. Ascents of the high peaks in the Alps were generally made with a local mountain guide who would painstakingly chop each step in hard ice with an axe, creating a staircase of sorts for the following team.

Guiding mountains became a local profession, and first ascents of peaks in the Alps were sought after by wealthy patrons travelling from afar. In 1864, the Victorian alpinist Leslie Stephen wrote in the *Alpine Journal*: "*I do not myself ever cut steps (in the Alps) when I can get a guide to do it for me, first because a guide can do it much better, and secondly because he is paid to do it".* It wasn't until the 1850's that the first European mountain guide associations were formed, or that the tools of ascent improved significantly so that a more efficient style could develop.

As the easier mountains became more popular as recreational mountain climbing and training for exploration further afield, the desire to first stand on untouched summits grew, so more efficient tools were developed. Around 1840, early specialised



ice axes appear, combining the alpenstock and the hatchet into a single tool. The early ice axes were long affairs, often over 1.5m in length, with a simple pick and the adze vertically oriented as in a wood axe; by 1860, the horizontal adze for more efficient step cutting became more widespread.

Edward Whymper climbed the Matterhorn in 1865 and many other technical high Alp summits, and was known to carry a clawed hook attached to a short piece of rope, used for an occasional move upward and for short descents, and this system was later used mostly for descent by Georg Winkler. Occasionally an iron eyebolt was hammered into a crack for a hand or foothold. By the

Edward Whymper--note his vertical adze

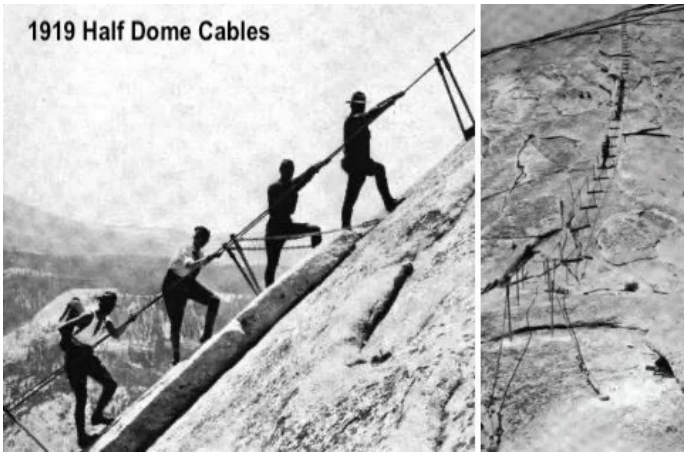
end of the 1800's nearly every high peak in the Alps, and many in North America, had been climbed with these tools and methods: mostly free climbing, with any means possible to overcome short technical sections of ice and rock.

The ropes of the day were stiff and heavy braided hemp, used primarily for creating human chains for safe travel across crevassed glaciers, or as an aid for the "second" following up a bold leader who might have used a shoulder stand to ascend a tricky passage. As in the tragic case on the first ascent of the Matterhorn, the ropes could generally not withstand a fall, when one slipped setting off a cascade effect of the connected climbers, and four climbers perished when the rope broke while being held fast by the climbers above.

As the highest summits were reached, first in Europe, then North America, and even in some of more remote ranges, climbers then turned their eyes to steeper vertical adventures, and the next level of challenge was exposed like a layer of a peeling onion. The so-called "impossible climbs" beckoned rugged individuals who were willing to push their limits, and ever more difficult routes were forged up steeper terrain. The pioneers reshaped codes of conduct and created new genres of climbing with new and improved tools, often implemented in ways far beyond their original intent. The rise in vertical standards throughout the years is intertwined with the evolution of equipment designed for ascent.

18th Century Mountaineering Equipment

Next: The probable first ascent of Half Dome by George Anderson in 1875 was the first big bolted climb in North America.



American Trail Builders, 1800's

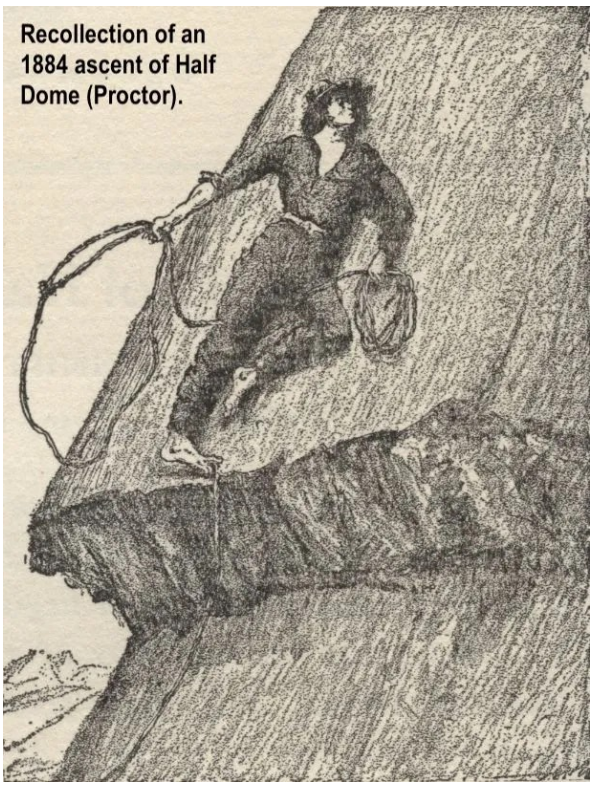
HALF DOME, 1875
As Americans were manifesting their destiny and exploring the West's more remote regions, the Scottish trailbuilder George Anderson became the first to stand atop Yosemite's Half Dome, previously considered inaccessible. In 1875, Anderson spent a week methodically climbing the steep east slab of Half Dome using the same granite bolting technology he was using to secure trails through the Sierra Nevada wilderness. With hand drill and hammer, he created holes (16mm in diameter and up to 100mm deep), then filled the hole with a large eyebolt to which he could affix a rope.

After hours of effort on each hard-earned bolt, he would step onto it, balance himself, and drill again. In areas where the angle of the slab eased, he free climbed from stance to stance. Anderson lived in a cabin at the spring near the saddle of Half Dome, and each day tied a rope from his highest bolt so that he could descend to his cabin then re-ascend to his high point the next day--the first case of fixed ropes in Yosemite. The naturalist John Muir, an early Half Dome summiteer, described the event, "New routes have been done on South Dome (as it was then known), but the skill and courage of Anderson have not been surpassed".

The route became popular over the following years. Anderson regularly upgraded the ropes and helped guide as many as 60 people each year to gain the summit, hand-over-handing the fixed ropes. Anderson dreamed of creating a wooden stairway to the summit.
In 1884 Anderson, aged 47, died of pneumonia and his fixed lines and some of the eye-bolts were "carried away by ice"

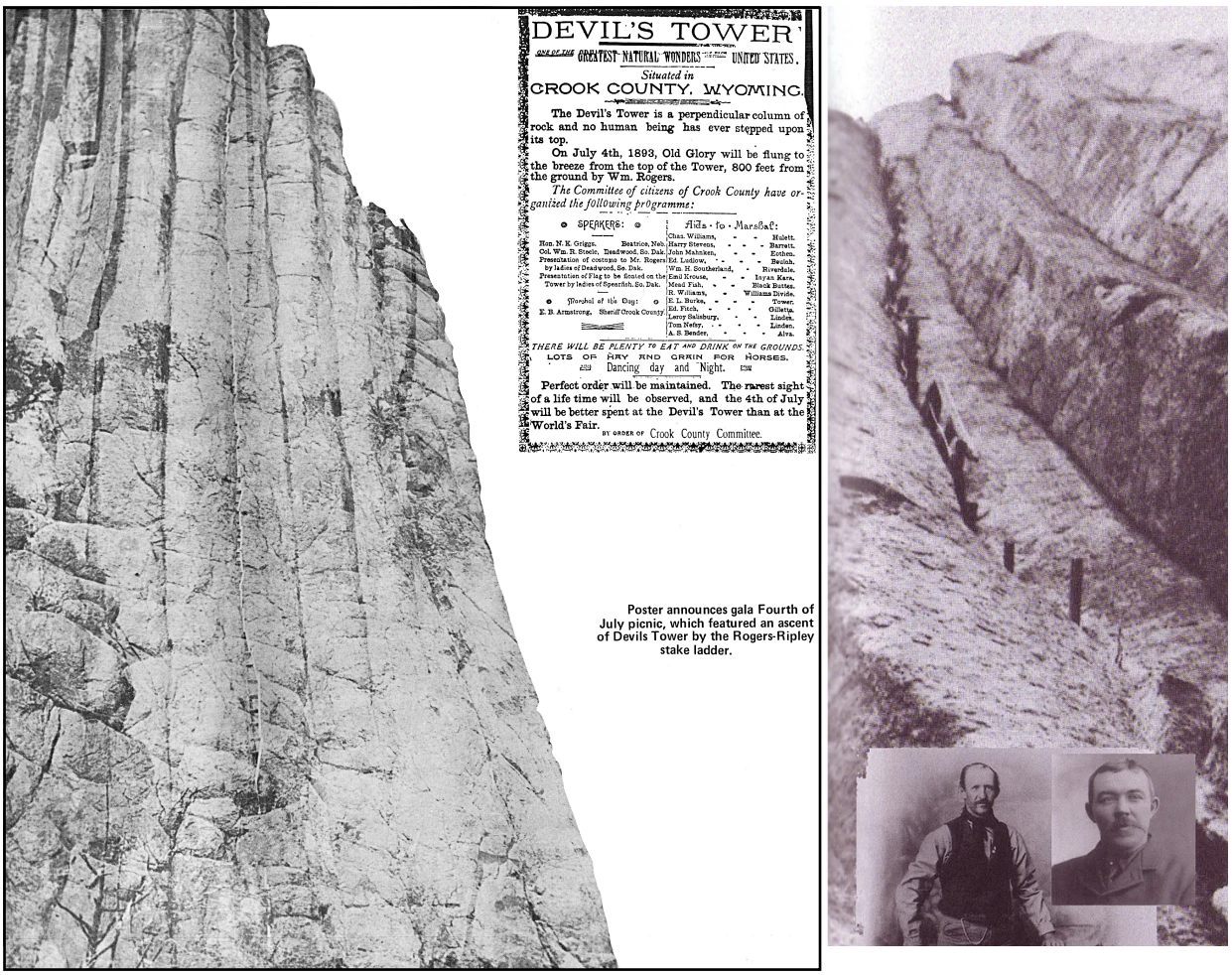
George Anderson cabin near Half Dome, 1881

over the previous winter. During the following decades the summit was less frequently climbed, as it had become a more hazardous adventure without regular maintenance of the ropes and bolts, sometimes involving lassoing bolts from below. In 1919 the route was fully re-established by a member of the Sierra Club who created a new double-cable "rock stairway," which has been largely maintained to this day.


Recollection of an 1884 ascent of Half Dome (Proctor).

DEVIL'S TOWER,1893 (Lakota: Mato Tipila)
Farther east, Wild West ingenuity paved the way for the first ascent of Wyoming's spectacular Devil's Tower in June, 1893, when ranchers Willard Ripley and William Rogers spent six weeks engineering a wooden ladder on the southeast corner of the tower. The ladder consisted of sharpened wooden spikes about 75mm in diameter and about 750mm long, hammered into the continuously vertical crack, with boards connecting the spikes. The ranchers climbed it a second time during a Fourth of July celebration, proudly planting a U. S. flag on the summit during a widely advertised event. The volcanic monolith was not climbed by another route until 1937 by Fritz Wiessner, Lawrence Coveney and William House using pitons, ropes, and technical climbing ability.

Like deVille's ascent of Mont Aiguille four hundred years earlier, these two climbs were isolated events using any means necessary for the ascent, and although American climbers pioneered rudimentary belay and safety techniques for the first ascent of the Grand Teton in the late 1800's, the marriage of technology and climbing to create efficient systems for ascent really began in Europe, where specific climbing techniques and equipment were becoming more refined by the end of the 19th century.



DEVIL'S TOWER

ONE OF THE GREATEST NATURAL WONDERS OF THE UNITED STATES.

Situated in

CROOK COUNTY, WYOMING.

The Devil's Tower is a perpendicular column of rock and no human being has ever stepped upon its top.

On July 4th, 1893, Old Glory will be flung to the breeze from the top of the Tower, 800 feet from the ground by Wm. Rogers.

The Committee of citizens of Crook County have organized the following programme:

SPEAKERS:

Hon. N. K. Griggs, Beatrice, Neb.
Col. Wm. R. Steele, Deadwood, So. Dak.
Presentation of cocktops to Mr. Rogers by ladies of Deadwood, So. Dak.
Presentation of Flag to be floated on the Tower by ladies of Spearfish, So. Dak.

Marshal of the Day:
E. B. Armstrong, Sheriff Crook County

Fields to Marshal:

Chas. Williams, Hulett.
Harry Stevens, Barnett.
John Mahnken, Eothen.
Ed. Ludlow, Beulah.
Wm. H. Southerland, Riverdale.
Emil Krouse, Inyan Kara.
Mead Fish, Black Buttes.
R. Williams, Williams Divide.
E. L. Burke, Tower.
Ed. Fitch, Gillette.
Leroy Salisbury, Linden.
Tom Nefzy, Linden.
A. S. Bender, Alva.

THERE WILL BE PLENTY TO EAT AND DRINK ON THE GROUNDS

LOTS OF HAY AND GRAIN FOR HORSES.

Dancing day and Night.

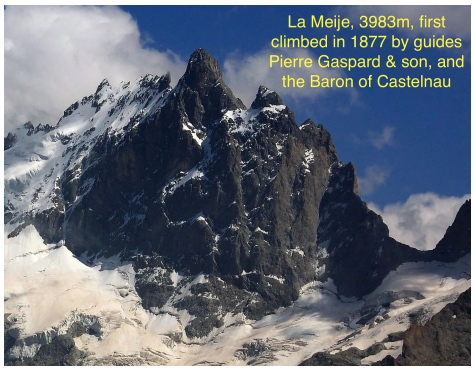
Perfect order will be maintained. The rarest sight of a life time will be observed, and the 4th of July will be better spent at the Devil's Tower than at the World's Fair.

BY ORDER OF Crook County Committee.

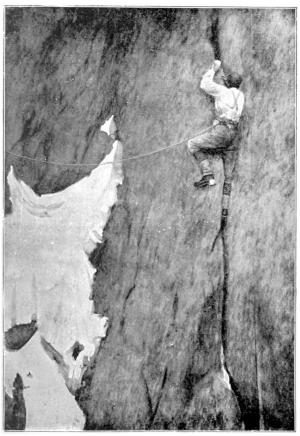
Poster announces gala Fourth of July picnic, which featured an ascent of Devils Tower by the Rogers-Ripley stake ladder.

The rise of iron for ascent

Back in Europe, after the famed first ascent (and tragedy) on the Matterhorn in 1865, in the French/Italian/Austrian/Swiss Alps, the remaining unclimbed high summits were climbed primarily with the prevailing alpine technique of laborious cutting steps in steep snow using instep crampons and long ice axes. Most of the ascents were facilitated by guides with sharp local weather knowledge and extensive mountaineering skills, hired by wealthy patrons, though the ethic of climbing without the assistance of guides was also developing.
One of the last high alpine peaks to fall was the Meije in France, with no easy route to the summit. Whymper wrote, "Meije is the last--the only--big alpine peak that has not been trodden by the foot of man" (though it should be noted there were many woman alpine climbers at this time). In 1877, the Baron of Castelnau, who had climbed Mont Blanc four times as a teenager, joined with the guide Pierre Gaspard and son for the first successful ascent, after which the Baron, 20 years old, retired from climbing. Their ascent of Meije is celebrated by the French Alpine Club, which was founded only a few years earlier, as it was considered the last important summit of the Alps and “one of the rare peaks to escape our British neighbours”.


La Meije, 3983m, first climbed in 1877 by guides Pierre Gaspard & son, and the Baron of Castelnau

As the highest summits were climbed, the next big climbing challenges were the Aiguilles—often more sheer and sometimes as high as the high peaks but without sufficient "prominence"[3] (footnote)—such as the Aiguilles Noire de Peuterey, Petite Dru, Grand Charmoz, and Grépon.
Many of these Aiguille ascents involved moderate (5.5/5.6) rock climbing in exposed and wandering situations, where a fall was not an option with the ropes of the day. Some of the technical rock climbing sections were christened and feared, such as "Mummery’s Crack" on the Grépon, a notoriously difficult section now rated 5.7, and retained its reputation as one of the hardest rock climbs in the Western Alps for the next 30 years. The standard climbing boot of this era had metal-studded soles, and were becoming more and more specialised for different kinds of climbing (very difficult bouldering using boots with a fine nail pattern was noted in the Elbsandsteingebirge around this time).


Mummery’s Crack on the Grépon (first ascent by Swiss climber and guide Benedikt Venetz, 1881)

H. HARDEN,
PRACTICAL ALPINE BOOTMAKER.
Boots made from an old one as pattern and nailed complete with best small and large Alpine Nails, Swiss Pattern.
PRICES ON APPLICATION.
ST. JOHN STREET,
KESWICK, CUMBERLAND.

[3] *footnote: An independent mountain summit in the Alps, as defined by the International Climbing and Mountaineering Federation, traditionally requires at least 300m topographic prominence.*

Aiguille Noire de Peuterey 3773m (1877)
Aiguille des Grands Charmoz 3445m (1885)
Petite Aiguille du Dru 3733m (1879)
Aiguille du Grépon 3482m (1881)

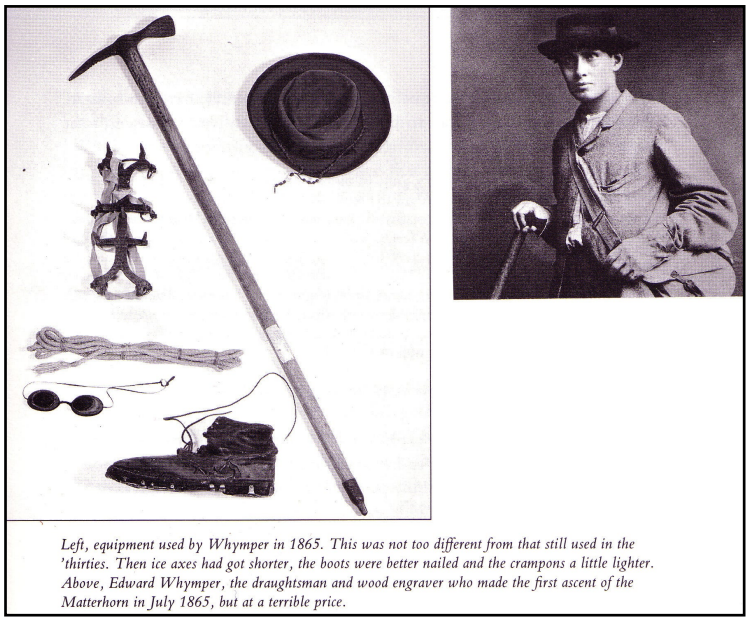
Above: Four Aiguilles in the Alps with year of their first ascent.

The Giant's Tooth

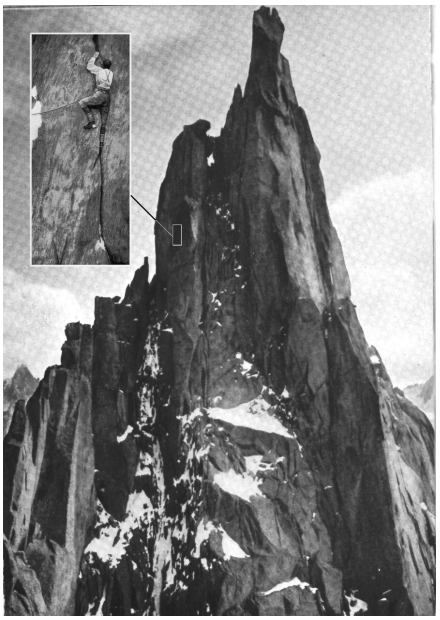
In 1880, Albert Mummery, who had already done many first ascents in the Alps, declared the summit of Dent du Géant (the "Giant's Tooth") "absolutely inaccessible by fair means" after being turned back by a steep band of slabs. Several others teams who had also tried to overcome this section had also failed. Two years later, in 1882, the Maquignaz guiding family broke with alpine tradition and forged a route up the slabs by systematically hammering a number of rudimentary pitons (called “stanchions” at the time) as hand- and foot-holds into cracks over a period of three days, each day fixing ropes to their high point. Their clients, the Sella family, followed the ropes for the first ascent the following day. The route, "Sella's Staircase", is sometimes said to mark the end of the “Silver Age of Alpinism”, and with the more extensive use of mechanical tools for the ascent of the Giant’s Tooth, the debate on the sporting limits of style and mechanical tools in the mountains began in earnest (the route still has fixed ropes “in situ”) [4]. It would not be the last time of what constituted “fair means” of ascent would be questioned and debated.

Dent Du Géant, by Gustav Kroener

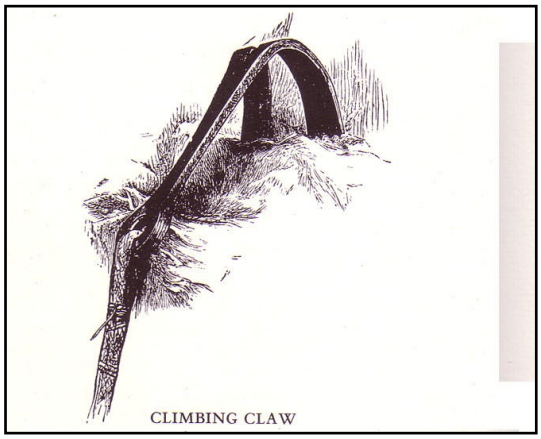
[4] Footnote: the second ascent was a month later, by William Graham and the Maquingnaz family guides. The route up the steep slabs of the Dent du Géant is still to this day maintained with thick grabby fixed ropes, more similar to the ropes of this era; but even with the ropes, the route requires the skills and abilities of a 5.6 rock climber and very exposed climbing. Graham used all of the sieged ropes and pitons of the Sella expedition, and he also climbed to the slightly higher summit of the tooth. Soon after, he applied, but was denied acceptance into the prestigious British Alpine Club, perhaps because of his use of what many of the members of the Alpine Club considered unsporting methods to claim an ascent. Nevertheless, he went on to have an adventurous life.



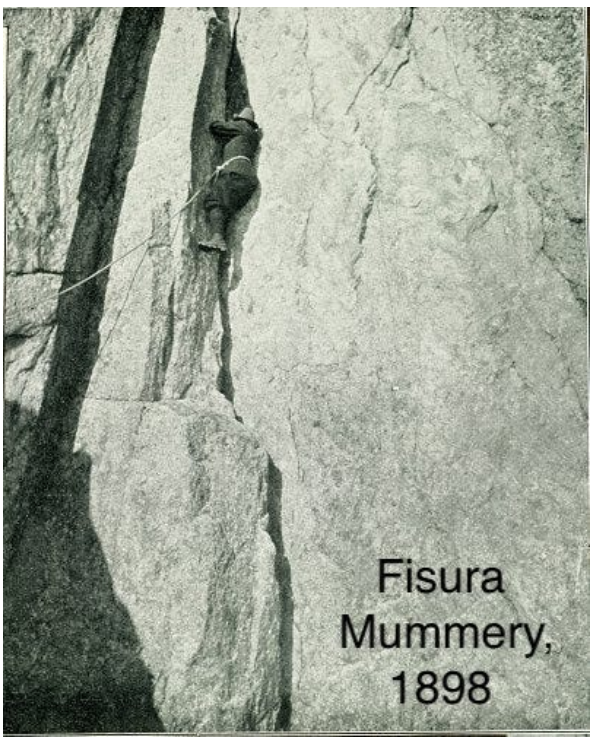
Left, equipment used by Whymper in 1865. This was not too different from that still used in the 'thirties. Then ice axes had got shorter, the boots were better nailed and the crampons a little lighter. Above, Edward Whymper, the draughtsman and wood engraver who made the first ascent of the Matterhorn in July 1865, but at a terrible price.

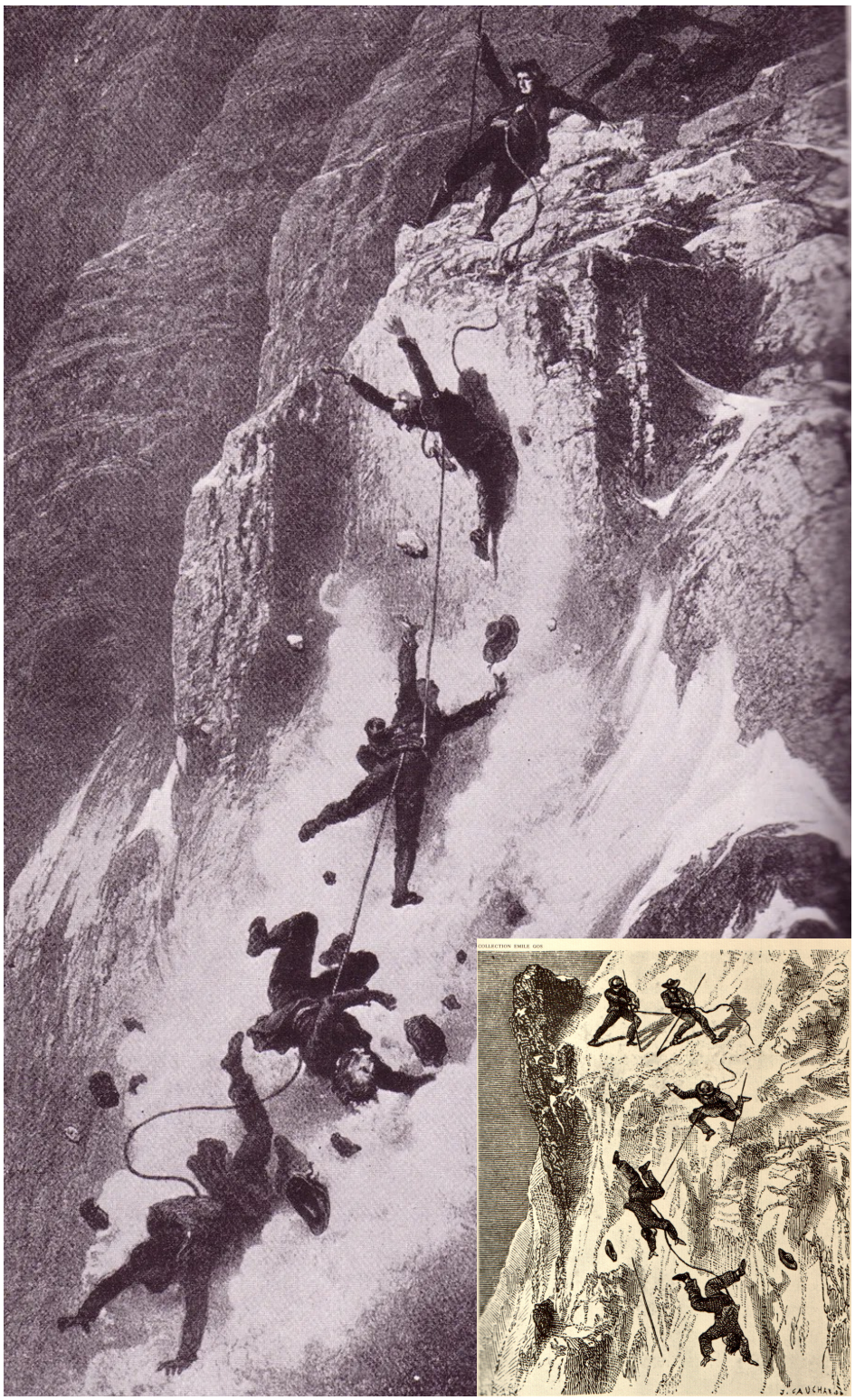


Above: Mummery on his eponymous crack on his 1883 ascent of Petit Grépon with Lily Barstow . It was Mummery's third climb of the Grépon —from Guido Rey, Alpinismo Acrobatico.



Edward Whymper sometimes carried a clawed hook attached to a short piece of rope. The 17-year-old Munich climber Georg Winkler also carried a hook attached to a rope, and occasionally used it for descent from the many rocky spires he climbed, perhaps even from his famous solo ascent of the Vajolet Towers in 1887. Sometimes called a 'grappling hook', according to Whymper, the 'claw' could also be placed at the end of an alpenstock, though modern climbers might feel climbing on a blindly placed hook requires great faith. In 1905, the Austrian alpinist and surgeon Günther von Saar described himself using a 'strong steel hook, in the form of a question mark, attached to a 10m rope' as a tool for descent.





Left: The infamous Matterhorn accident in 1865 happened on the descent. Ropes do not actually "break" as often imagined, but they generally get cut under tension from a rock or other sharp object. A rope breaking really means it failed at the point of most stress, often at a knot, and with other factors involved.

As the Matterhorn became more popular, in addition to short lengths of rope fixed on the Matterhorn from early in its climbing history, Hans Lorenz, writing in 1900, suggests that from 1870 stanchions were also being used for descent: "And behold, there is a rusty broken Stift [pin] in the rock, hit more than three decades ago, a memorable sign of a memorable time."

Rope Technology in the 19th century

CORDE DA MONTAGNA

« ... La tragica disgrazia avvenne presso il noto, difficile e pericoloso strapiombo della parete ovest; il compagno del morto si era fermato sopra un piccolo terrazzino, a 18 metri sotto lo strapiombo ed aveva assicurata la corda nel miglior modo, attorno ad uno spuntone di roccia, quando il capo cordata, che aveva quasi vinto lo strapiombo, improvvisamente precipitò, rimbalzando sull'orlo del terrazzino e sparendo nel vuoto. Il compagno trattenendo la corda con tutta forza, attese lo strappo, ma purtroppo la corda non resse e l'infelice precipitò per tutta la parte inferiore della parete ovest. Il cadavere orrendamente sfracellato, fu trovato nel canalone sottostante.... ».

Quante volte abbiamo letto una simile notizia! Noi alpinisti generalmente accettiamo il fatto compiuto, il nostro cordoglio va spontaneo alla famiglia ed agli amici del disgraziato e ci prepariamo a rispondere alla caterva dei pacifici cittadini, che prendono lo spunto per dare addosso all'alpinismo, ed a coloro che intraprendono delle salite pericolose.

Sarebbe bene però che il mondo alpinistico si occupasse delle cause di ogni disgrazia alpina con precise valutazioni tecniche, e ciò per questione di capitale importanza, qual'è il materiale, tipo e trattamento della corda; sappiamo indicare la pelle più indicata per una scarpa di montagna, come dev'essere la chiodatura e come dev'essere trattata prima e dopo l'uso, conosciamo forma e colore degli occhiali da neve, tipo e taglio di un buon vestito da montagna, ecc., ma pochissimi sono gli alpinisti che son competenti in fatto di corde, oggetto di equipaggiamento da cui dipende spesso vita o morte di chi ne fa uso.

CORDA RITORTA.

E. M.

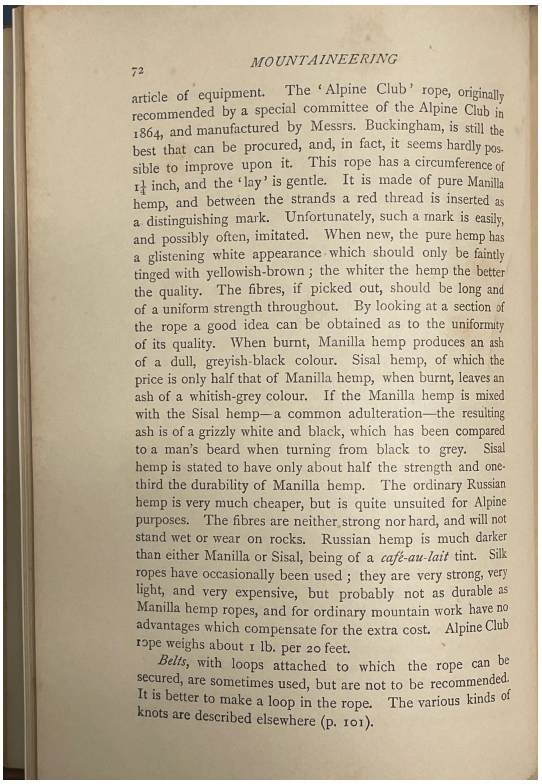
È scopo di queste righe di dare qualche consiglio pratico, chiarendo altresì alcune norme fondamentali.

La corda ideale dovrebbe avere le seguenti qualità:

1° massima resistenza;
2° minimo deterioramento;
3° peso minimo;
4° massima flessibilità.

Ropes are one of human's earliest tools, and rope-making among the oldest human skills. A section of rope crafted 50,000 years ago was recently found in a cave in southeastern France (2020); this archaeological fragment was created with rope-making techniques still used today: twist a bundle of fibres in one direction (in this case, fibrous tree bark), then twist three of those bundles (3-ply) in the other direction, to build a strong "laid" rope.

The natural twisted-fiber rope was the state-of-the-art tool for mountain climbing until 1953[5]. The specific design such as three or four ply, the longitudinal angle of the "lay", and other variations have trade-offs for climbing rope characteristics: e.g. strength, elasticity, durability, water absorption, and suppleness. For example, a steep "lay" lessened water absorption, but made for a stiffer, harder-to-use rope, so a medium lay was generally recommended.



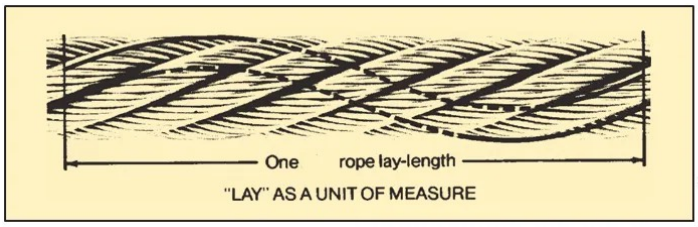
MOUNTAINEERING

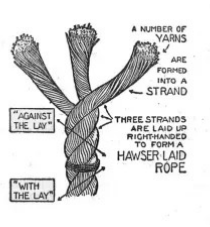
72

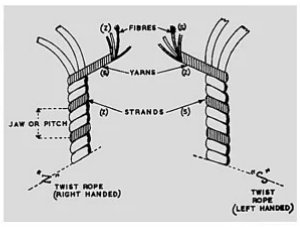
article of equipment. The 'Alpine Club' rope, originally recommended by a special committee of the Alpine Club in 1864, and manufactured by Messrs. Buckingham, is still the best that can be procured, and, in fact, it seems hardly possible to improve upon it. This rope has a circumference of $1\frac{1}{4}$ inch, and the 'lay' is gentle. It is made of pure Manilla hemp, and between the strands a red thread is inserted as a distinguishing mark. Unfortunately, such a mark is easily, and possibly often, imitated. When new, the pure hemp has a glistening white appearance which should only be faintly tinged with yellowish-brown; the whiter the hemp the better the quality. The fibres, if picked out, should be long and of a uniform strength throughout. By looking at a section of the rope a good idea can be obtained as to the uniformity of its quality. When burnt, Manilla hemp produces an ash of a dull, greyish-black colour. Sisal hemp, of which the price is only half that of Manilla hemp, when burnt, leaves an ash of a whitish-grey colour. If the Manilla hemp is mixed with the Sisal hemp—a common adulteration—the resulting ash is of a grizzly white and black, which has been compared to a man's beard when turning from black to grey. Sisal hemp is stated to have only about half the strength and one-third the durability of Manilla hemp. The ordinary Russian hemp is very much cheaper, but is quite unsuited for Alpine purposes. The fibres are neither strong nor hard, and will not stand wet or wear on rocks. Russian hemp is much darker than either Manilla or Sisal, being of a *café-au-lait* tint. Silk ropes have occasionally been used; they are very strong, very light, and very expensive, but probably not as durable as Manilla hemp ropes, and for ordinary mountain work have no advantages which compensate for the extra cost. Alpine Club rope weighs about 1 lb. per 20 feet.

Belts, with loops attached to which the rope can be secured, are sometimes used, but are not to be recommended. It is better to make a loop in the rope. The various kinds of knots are described elsewhere (p. 101).

Rope Technology 1890s



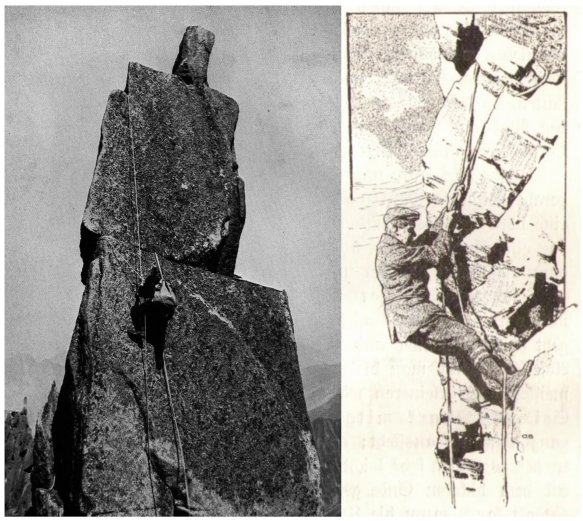

A NUMBER OF YARNS ARE FORMED INTO A STRAND
"AGAINST THE LAY"
THREE STRANDS ARE LAID UP RIGHT-HANDED TO FORM A HAWSER LAID ROPE
"WITH THE LAY"



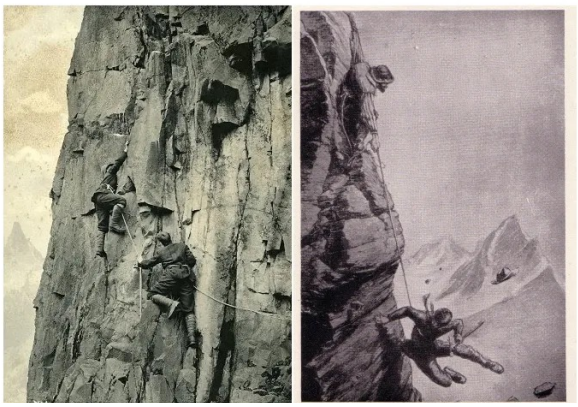
[5]*Footnote: Braided woven ropes were also used but generally rejected as internal damage was difficult to readily detect. In 1953, kernmantle rope technology using a separate core (kern) covered by a braided sheath (mantle) was used to produce climbing ropes in Europe. Kernmantle climbing ropes were made possible by the new nylon fibres that were becoming more readily available in the post WWII years. But despite the improved technology, it wasn't until after 1972, when Chouinard started supplying his "Fantasia" brightly coloured ropes, that the kernmantle rope design became the standard rope for most climbers in the USA.*

Natural fibre climbing ropes used from the 1800's to the 1960's were similar diameters of ropes we use today (8mm-11mm), yet less than half the strength (~2000 pounds-force/>10kN). Two natural fibres were primarily used: the coarse hemp fibres from the cannibis plant, and the harder manila fibres from the abaca plant (banana family). The fibres varied from a few millimetres to a meter in length (compare with modern synthetic ropes which have continuous fibres, i.e. 200m fibres for a 200m rope). Finer and softer flax fibres were also used, but flax ropes are sensitive to rot and degrade quickly with outdoor use due to UV damage.

Standard climbing rope lengths of this era were generally between 60' to 120' long (18m - 36m), and were mostly used as a rock climbing tool to lasso a horn or feature, to descend hand-over-hand, or to protect a short traverse with only one climber moving at a time. Natural fibre ropes have high impact forces (low stretch) which means they cannot absorb a lot of energy before they break. Guides could use them to catch falling clients below, but the adage, "the leader must not fall" was more than just a

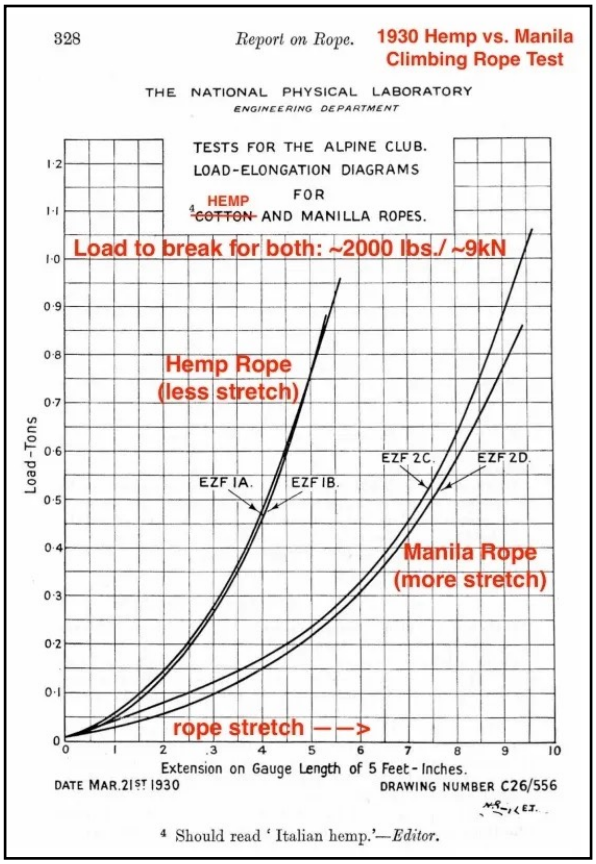


Typical rope use in the early era of rock climbing (1)— to ascend or descend by lassoing a natural feature..



Typical rope use in the early era of rock climbing. Left: as part of a human anchor chain. Right: to catch the second climber, (here, the guide Zurbriggen is depicted catching Edward Fitzgerald in the New Zealand Alps, c. 1894)

Typical rope use in the early era of rock climbing (3)—first climber gets help to manoeuvre over an obstacle while dragging the rope, rope then used to pull the second climber over same obstacle.



mantra, as ropes were expected to break in an 8 foot (2.5m) fall, based on tests reported in the 1864 Alpine Journal and which remained the common wisdom until the mid-20th century. Furthermore, the high impact forces combined with being tied in solely around the waist (no leg-loops) also meant that a long fall could likely break one's back—if indeed the rope did not break!

If a natural fibre rope did take a fall, it would lose most of its natural elasticity and generally needed replacement. Furthermore, the strength of natural fibre ropes diminished rapidly with time. The 1942 Handbook of American Mountaineering (Henderson) warned that "Tests have shown that a new rope kept over winter in the average house and not used will lose as much as one-half its strength".

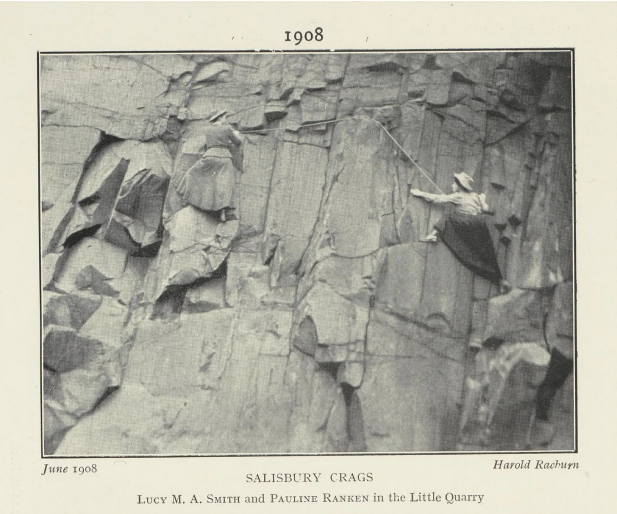
During this era, the concept of a rope to protect a long climbing lead fall was unthinkable. Elongation under load is the primary parameter of a rope's ability to absorb energy in a fall, and not break, yet natural fiber ropes do not offer a wide variability in this regard. Furthermore, there was little consideration of rope elasticity as a desirable rope feature; indeed, the "sponginess" of a rope was considered a negative quality by many climbers as well as a major climbing rope manufacturer in the 1930's[6].

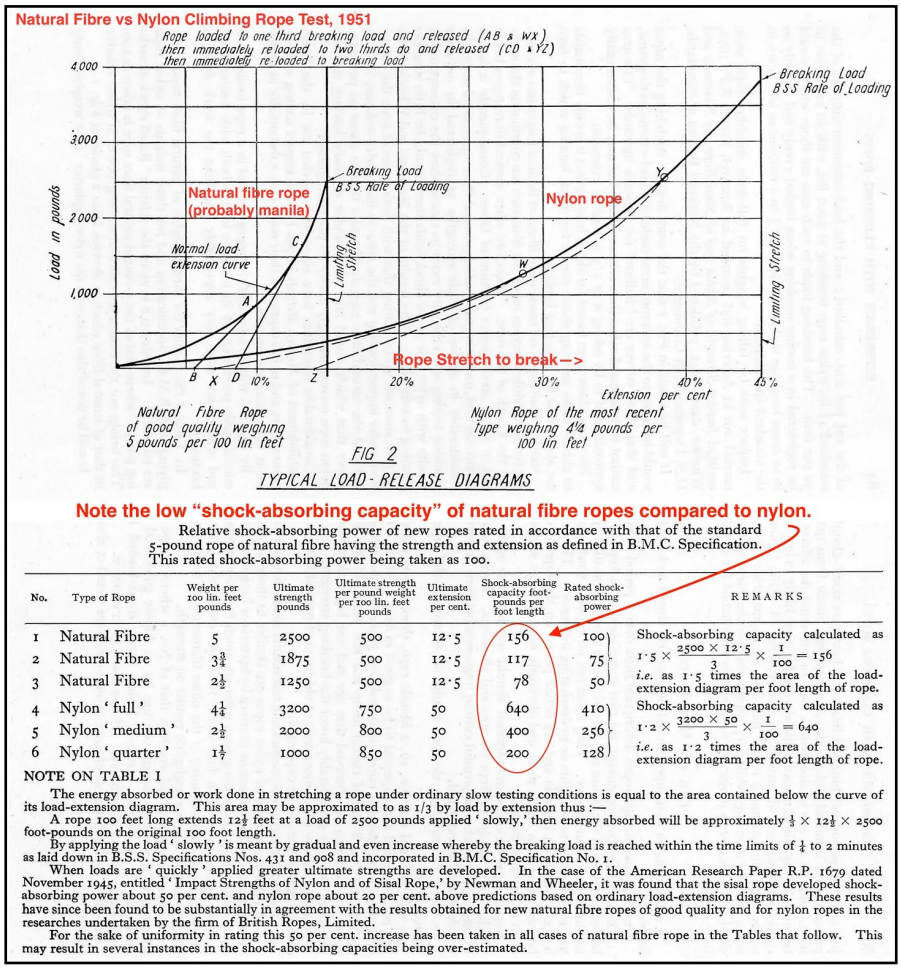
—note about rope specification:

Between 1864-1932: ropes were specified by weight (in pounds) per 100 feet, and the rope circumference (in inches). For example, a rope with 1 1/4 inch circumference (10.1mm diameter) might be specified as a 4.5 pound/100 foot rope. So the 5 lb. natural fibre rope listed on the diagram above is about a 10.5mm diameter rope.

[6] S.B. Donkin correctly points this out in the 1932 Alpine Journal: "*British Ropes point out that the elongation of their rope (ed: a hemp rope) under load is much less than that of the other make of rope tested (ed: a manila rope), and that, in their opinion, 'this is of some importance, as it would tend to prove that Beale's (manila) rope is of a more spongy nature than ours.' This statement suggests to the reader that a rope having a minimum of stretch is the better rope. It is this interpretation which I wish to correct, because the reverse is true. Engineers know that a rope which has the greatest stretch must be the safer rope to use.*"

In 1920, Geoffrey Winthrop Young in Mountain Craft recognised that an "indirect belay" where some sort of slippage occurred in the belay was preferable to a "direct belay" (rope anchored or held fast during a fall), but it wasn't until the 1930's that the shock-loading characteristics of a climbing rope were formally recognised and considered, and the awareness of energy absorption over a longer time led to specific "dynamic belay" techniques—intentional controlled rope slippage—first outlined by Richard Leonard in the USA and later by Ken Tarbuck in the UK. Only then did climbers feel more secure in taking actual lead falls on the high-impact-force natural fibre ropes of the era, and only then with an expert (gloved) belayer.





Note the low "shock-absorbing capacity" of natural fibre ropes compared to nylon.

Relative shock-absorbing power of new ropes rated in accordance with that of the standard 5-pound rope of natural fibre having the strength and extension as defined in B.M.C. Specification. This rated shock-absorbing power being taken as 100.

No.	Type of Rope	Weight per 100 lin. feet pounds	Ultimate strength pounds	Ultimate strength per pound weight per 100 lin. feet pounds	Ultimate extension per cent.	Shock-absorbing capacity foot-pounds per foot length	Rated shock-absorbing power	REMARKS
1	Natural Fibre	5	2500	500	12·5	156	100	Shock-absorbing capacity calculated as $1{\cdot}5 \times \frac{2500 \times 12{\cdot}5}{3} \times \frac{1}{100} = 156$
2	Natural Fibre	3¾	1875	500	12·5	117	75	
3	Natural Fibre	2½	1250	500	12·5	78	50	*i.e.* as 1·5 times the area of the load-extension diagram per foot length of rope.
4	Nylon 'full'	4¼	3200	750	50	640	410	Shock-absorbing capacity calculated as $1{\cdot}2 \times \frac{3200 \times 50}{3} \times \frac{1}{100} = 640$
5	Nylon 'medium'	2½	2000	800	50	400	256	
6	Nylon 'quarter'	1¼	1000	850	50	200	128	*i.e.* as 1·2 times the area of the load-extension diagram per foot length of rope.

NOTE ON TABLE I

The energy absorbed or work done in stretching a rope under ordinary slow testing conditions is equal to the area contained below the curve of its load-extension diagram. This area may be approximated to as 1/3 by load by extension thus :—

A rope 100 feet long extends 12½ feet at a load of 2500 pounds applied 'slowly,' then energy absorbed will be approximately ⅓ × 12½ × 2500 foot-pounds on the original 100 foot length.

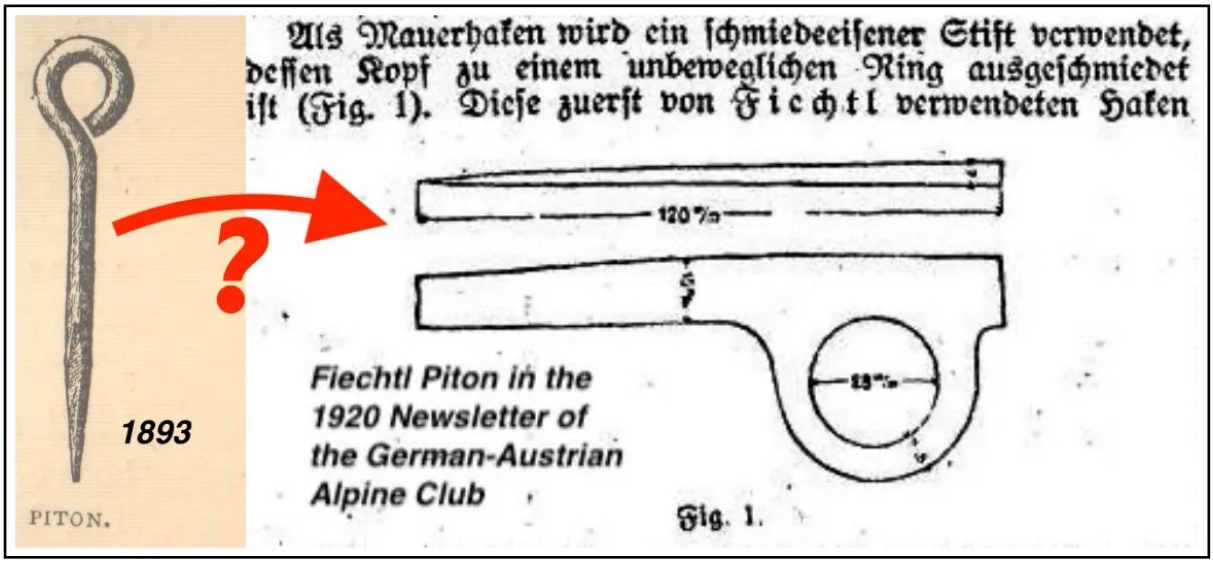
By applying the load 'slowly' is meant by gradual and even increase whereby the breaking load is reached within the time limits of ¼ to 2 minutes as laid down in B.S.S. Specifications Nos. 431 and 908 and incorporated in B.M.C. Specification No. 1.

When loads are 'quickly' applied greater ultimate strengths are developed. In the case of the American Research Paper R.P. 1679 dated November 1945, entitled 'Impact Strengths of Nylon and of Sisal Rope,' by Newman and Wheeler, it was found that the sisal rope developed shock-absorbing power about 50 per cent. and nylon rope about 20 per cent. above predictions based on ordinary load-extension diagrams. These results have since been found to be substantially in agreement with the results obtained for new natural fibre ropes of good quality and for nylon ropes in the researches undertaken by the firm of British Ropes, Limited.

For the sake of uniformity in rating this 50 per cent. increase has been taken in all cases of natural fibre rope in the Tables that follow. This may result in several instances in the shock-absorbing capacities being over-estimated.

Technical info on natural fibre ropes vs nylon from the 1951 Alpine Journal.

Climbing Pitons Early Evolution--part 1a--Origin of the term "piton", and Marmolada


Als Mauerhaken wird ein ſchmiedeeiſener Stift verwendet, deſſen Kopf zu einem unbeweglichen Ring ausgeſchmiedet iſt (Fig. 1). Dieſe zuerſt von Fiechtl verwendeten Haken
120 m/m
1893
PITON.
Fiechtl Piton in the 1920 Newsletter of the German-Austrian Alpine Club
Fig. 1.

How did the early mountain climbers go from using a simple wrought iron spike in 1893 to a the first "modern" piton, designed by Hans Fiechtl, by 1920?

To uncover the mysteries of piton design evolution in this early period, it's helpful to consider the broader aspects of development at the time.

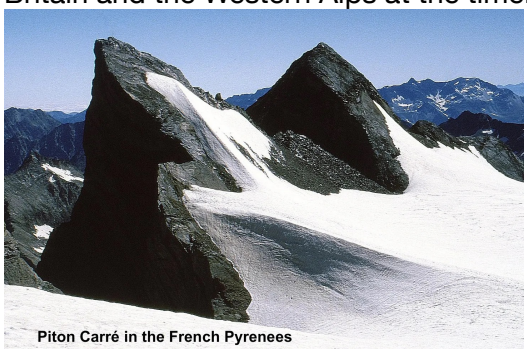
But first, what's in a name?

Origin of term "Piton"

It is interesting, perhaps ironic, that in 1893 Claude Wilson coined the "piton" in the "All England Series—Mountaineering", one of the first climbing instructional books in English, a "practical guide for would-be climbers". Claude was a self-taught doctor from south of London and a distinguished British alpinist who climbed hundreds of the most difficult summits in the western Alps, including the first guideless ascent of the Grepon at age 22 (1892). In the Alpine Journals of his era, the British generally referred to such devices—often disparagingly—as "iron stanchions" because that is exactly what they were in those early days of mountaineering: sections of wrought iron bars made for other

Fritz Schmitt wrote much about evolving climbing technology, and his writing and images changed the way climbing was perceived in the 1920's and beyond.

purposes, hammered into cracks with a handy nearby rock, and only acceptable as a rappel anchor as a fair means tool in Britain and the Western Alps at the time.

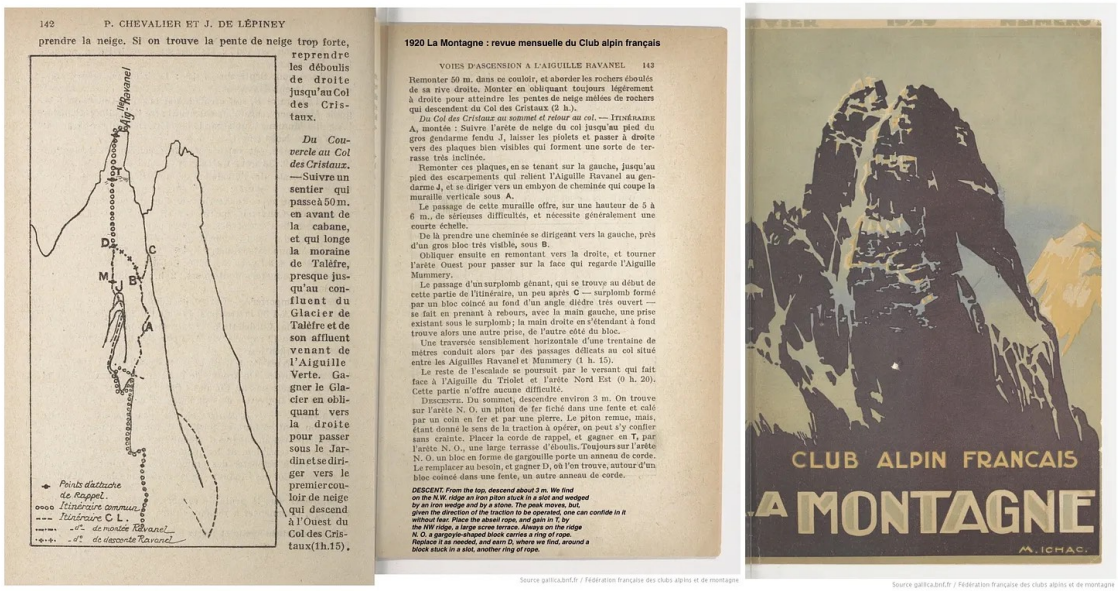


Piton Carré in the French Pyrenees

In the French mountaineering journals to 1904, the word “piton” occurs frequently, but only in reference to a steep spire of rock; never as a metal stanchion. The Club Alpin Français 1883 Bulletin Mensuel refers to the anchors on the first ascent of La Géant as “des coins ou pointes d'acier” (wedges or spikes of iron). The French Alpine Journal, La Montagne, first refers to a piton as metal hardware in 1918, and generally specifying a “piton de fer” (iron spike). In the 1916 report on the North Wall of Mont Aiguille, “Le clou” (nail) appears as a 20 cm long metal anchor. Isère’s North Wall was first climbed in 1895; the 1916 climbers removed le clou and proudly reported they did not use it for ascent (“sans l'aide”). It is one of the earlier references to a mechanical tool used for assistance on many ascents and descents of the era, yet generally ignored in the early French mountaineering literature.

In France, pitons gained greater respect and acceptance in the 1929 La Montagne when the great mountain guide Armand Charlet admitted, “…soon we are at the chimney with the iron piton (piton de fer). This piton which until now I have always disdained, I am very happy to use today.” At the moment, he was climbing in a storm at 3500m through a loose and icy chimney while an avalanche of debris was falling onto him, simul-climbing with his partner on the first winter ascent of the Dru.

Footnote: Miriam O’Brien in “Give Me The Hills” (1956) notes, in Chamonix in 1925 “pitons were not yet used, either as an aid to climbing or for assurance. Carabiners were absolutely unknown. By 1926, however, (Alfred) Couttet was using pitons, and using them skilfully.”



142 P. CHEVALIER ET J. DE LÉPINEY

prendre la neige. Si on trouve la pente de neige trop forte, reprendre les déboulis de droite jusqu'au Col des Cristaux.

Du Couvercle au Col des Cristaux. — Suivre un sentier qui passe à 50 m. en avant de la cabane, et qui longe la moraine de Talèfre, presque jusqu'au confluent du Glacier de Talèfre et de son affluent venant de l'Aiguille Verte. Gagner le Glacier en obliquant vers la droite pour passer sous le Jardinet se diriger vers le premier couloir de neige qui descend à l'Ouest du Col des Cristaux (1h.15).

Points d'attache de Rappel.
Itinéraire commun.
Itinéraire C L . . B
. . . . d'e montée Ravanel
. . . . d'e descente Ravanel

1920 La Montagne : revue mensuelle du Club alpin français

VOIES D'ASCENSION A L'AIGUILLE RAVANEL 143

Remonter 50 m. dans ce couloir, et aborder les rochers éboulés de sa rive droite. Monter en obliquant toujours légèrement à droite pour atteindre les pentes de neige mêlées de rochers qui descendent du Col des Cristaux (2 h.).

Du Col des Cristaux au sommet et retour au col. — ITINÉRAIRE A, montés : Suivre l'arête de neige du col jusqu'au pied du gros gendarme fendu J, laisser les piolets et passer à droite vers des plaques bien visibles qui forment une sorte de terrasse très inclinée.

Remonter ces plaques, en se tenant sur la gauche, jusqu'au pied des escarpements qui relient l'Aiguille Ravanel au gendarme J, et se diriger vers un embryon de cheminée qui coupe la muraille verticale sous A.

Le passage de cette muraille offre, sur une hauteur de 5 à 6 m., de sérieuses difficultés, et nécessite généralement une courte échelle.

De là prendre une cheminée se dirigeant vers la gauche, près d'un gros bloc très visible, sous B.

Obliquer ensuite en remontant vers la droite, et tourner l'arête Ouest pour passer sur la face qui regarde l'Aiguille Mummery.

Le passage d'un surplomb gênant, qui se trouve au début de cette partie de l'itinéraire, un peu après C — surplomb formé par un bloc coincé au fond d'un angle dièdre très ouvert — se fait en prenant à rebours, avec la main gauche, une prise existant sous le surplomb ; la main droite en s'étendant à fond trouve alors une autre prise, de l'autre côté du bloc.

Une traversée sensiblement horizontale d'une trentaine de mètres conduit alors par des passages délicats au col situé entre les Aiguilles Ravanel et Mummery (1 h. 15).

Le reste de l'escalade se poursuit par le versant qui fait face à l'Aiguille du Triolet et l'arête Nord Est (0 h. 20). Cette partie n'offre aucune difficulté.

DESCENTE. Du sommet, descendre environ 3 m. On trouve sur l'arête N. O. un piton de fer fiché dans une fente et calé par un coin en fer et par une pierre. Le piton remue, mais, étant donné le sens de la traction à opérer, on peut s'y confier sans crainte. Placer la corde de rappel, et gagner en T, par l'arête N. O., une large terrasse d'éboulis. Toujours sur l'arête N. O. un bloc en forme de gargouille porte un anneau de corde. Le remplacer au besoin, et gagner D, où l'on trouve, autour d'un bloc coincé dans une fente, un autre anneau de corde.

DESCENT. From the top, descend about 3 m. We find on the N.W. ridge an iron piton stuck in a slot and wedged by an iron wedge and by a stone. The peak moves, but, given the direction of the traction to be operated, one can confide in it without fear. Place the abseil rope, and gain in T, by the NW ridge, a large scree terrace. Always on the ridge N. O. a gargoyle-shaped block carries a ring of rope. Replace it as needed, and earn D, where we find, around a block stuck in a slot, another ring of rope.

Source gallica.bnf.fr / Fédération française des clubs alpins et de montagne

CLUB ALPIN FRANCAIS

LA MONTAGNE

M. ICHAC.

Source gallica.bnf.fr / Fédération française des clubs alpins et de montagne

An early reference to “Piton de Fer” (iron piton) in French mountaineering literature, as an anchor for descent.

The British were especially reluctant to publish—or admit use—any reference to pitons as a developing mountaineering tool in the early days of climbing. Even with the amazing routes in the Alps going up in the 30's with the aid of pitons by the continental pioneers, A. Cox read before the British Alpine Club in 1941[7], "*The piton, indeed, is in rather a different category, for it is never used, fortunately, as a mere convenience.· Undoubtedly it possesses a power for evil, and it is healthy that it should be viewed with suspicion.*"

In Italian, "chiodi da roccia" (rock nails) is the name for pitons, but the word "piton" in Italian can be translated to English as "snape", which is a verb meaning to bevel the end of a timber. As early rock anchors for climbing were often wood wedges in addition to iron stanchions, perhaps the Italian word for piton is the origin of Claude Wilson's reference. The word "piton" does appear in a 1895 French medical journal as a small peg hammered into bone in a surgical procedure; so it might be that Dr. Wilson borrowed the term from the French medical profession (source: Gallica.fr). Regardless of how the English/French name of "piton" came about, the advancement of pitons was led primarily in the Tyrol and the Dolomites, where our story will continue. Pitons were originally used in mountaineering as anchor to attach ropes for descent, then as an occasional hand or foothold, then progressing to protection for the roped climber a few moves past the piton. The method of protection advanced to a high art form in the Elbe by 1905 by Oscar Schuster and others.

Pitons as tools for protection were used to assist the first ascents of many of the great walls of the Dolomites.

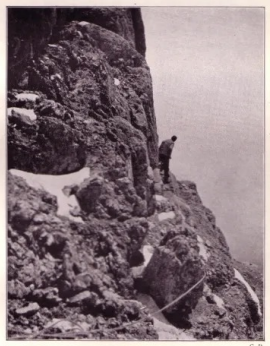
MARMOLATA, THE QUEEN OF THE DOLOMITES

The potential of pitons was soon realised as the key to climbing the largest inspiring expanses of vertical rock in the Eastern Alps. The new century was kicked off with Beatrice Tomassen's first ascent of the South Wall of Marmolata in 1901, the largest big wall ever climbed at the time, over 600m/2000 feet. Beatrice was a talented athlete and climber, who organised the first ascent with the Bortolo Zagonel and Michele Bettega. The wall had seen several attempts by 1901, and several mountain guides had made solo reconnaissances. In modern big wall parlance, it was a "prize": a clear, definable next-step in big wall climbing due to its size, altitude, and prominent location in the mountain landscape.

In un disegno di A.Caffi la parete SW della Marmolada con il tracciato seguito da Bettega in cordata con la Thomasson e Zagonèl. In alto la variante dei fratelli Leuchs effettuata durante la prima ripetizione nel 1902.

[7] *Paul Pritchard recently remarked to me, "avoiding pitons helped Britain push bold free climbing" and it's true. Then we chatted about the British big wall pioneers of the 50's and 60's who then led the world in technical remote big wall climbs, to be covered in later chapters.*

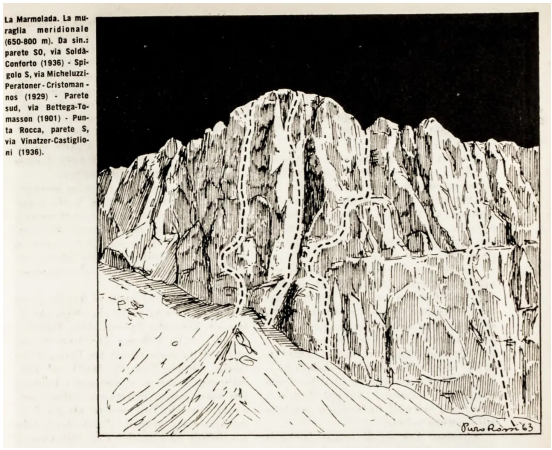
The Marmolata first ascent team used four pitons in key sections for their ascent (although the ways and means of the ascent were debated for the next few decades), and climbed in a long day. A route description was never presented, so



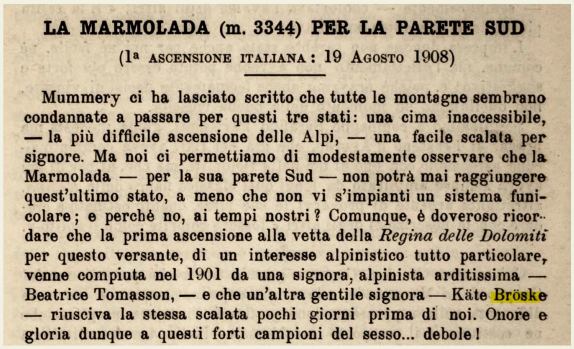
PIAZ AT THE FIRST PLATFORM.
(MARMOLADA.)

Above Left:Arcangelo Siorpaes and Beatrice Tomasson. Right: Tita Piaz on the South Wall of Marmolata in 1910 (Guido Rey).

subsequent climbers had to figure the route out for themselves. The second ascent in 1902 by the German mountaineering brothers Georg and Kurt Leuchs involved three days of initial reconnaissance, then two days on the wall in frosty conditions with a bivouac ("Biwak" auf Deutsch—note that the Leuchs team climbed a variant direct finish on the final headwall). Guido Rey climbed the route with Tita Piaz in 1910 and poetically described his adventure in "Alpinismo Acrobatico", by which time the route had had about 20 ascents and


La Marmolada. La muraglia meridionale (650-800 m). Da sin.: parete SO, via Soldà-Conforto (1936) - Spigolo S, via Micheluzzi-Peratoner - Cristomanos (1929) - Parete sud, via Bettega-Tomasson (1901) - Punta Rocca, parete S, via Vinatzer-Castiglioni (1936).

considered by Rey as the "most difficult in the whole chain of the Alps." Today, the route involves 27 pitches of climbing and has over 50 fixed pitons. Despite the route's significant advance in big wall commitment, the ascent was largely forgotten after WWI, when the difficulty of the climb had been eclipsed by a new generation of piton-assisted ascents in the greater Alps and in the USA.[8]



LA MARMOLADA (m. 3344) PER LA PARETE SUD

(1ª ASCENSIONE ITALIANA: 19 AGOSTO 1908)

Mummery ci ha lasciato scritto che tutte le montagne sembrano condannate a passare per questi tre stati: una cima inaccessibile, — la più difficile ascensione delle Alpi, — una facile scalata per signore. Ma noi ci permettiamo di modestamente osservare che la Marmolada — per la sua parete Sud — non potrà mai raggiungere quest'ultimo stato, a meno che non vi s'impianti un sistema funicolare; e perchè no, ai tempi nostri? Comunque, è doveroso ricordare che la prima ascensione alla vetta della *Regina delle Dolomiti* per questo versante, di un interesse alpinistico tutto particolare, venne compiuta nel 1901 da una signora, alpinista arditissima — Beatrice Tomasson, — e che un'altra gentile signora — Käte Bröske — riusciva la stessa scalata pochi giorni prima di noi. Onore e gloria dunque a questi forti campioni del sesso... debole!

A writeup of the first Italian ascent of the South Wall of Marmolada in 1908 honored the "daring and strong champions Tomasson and Broske who preceded them" (1910 CAT).

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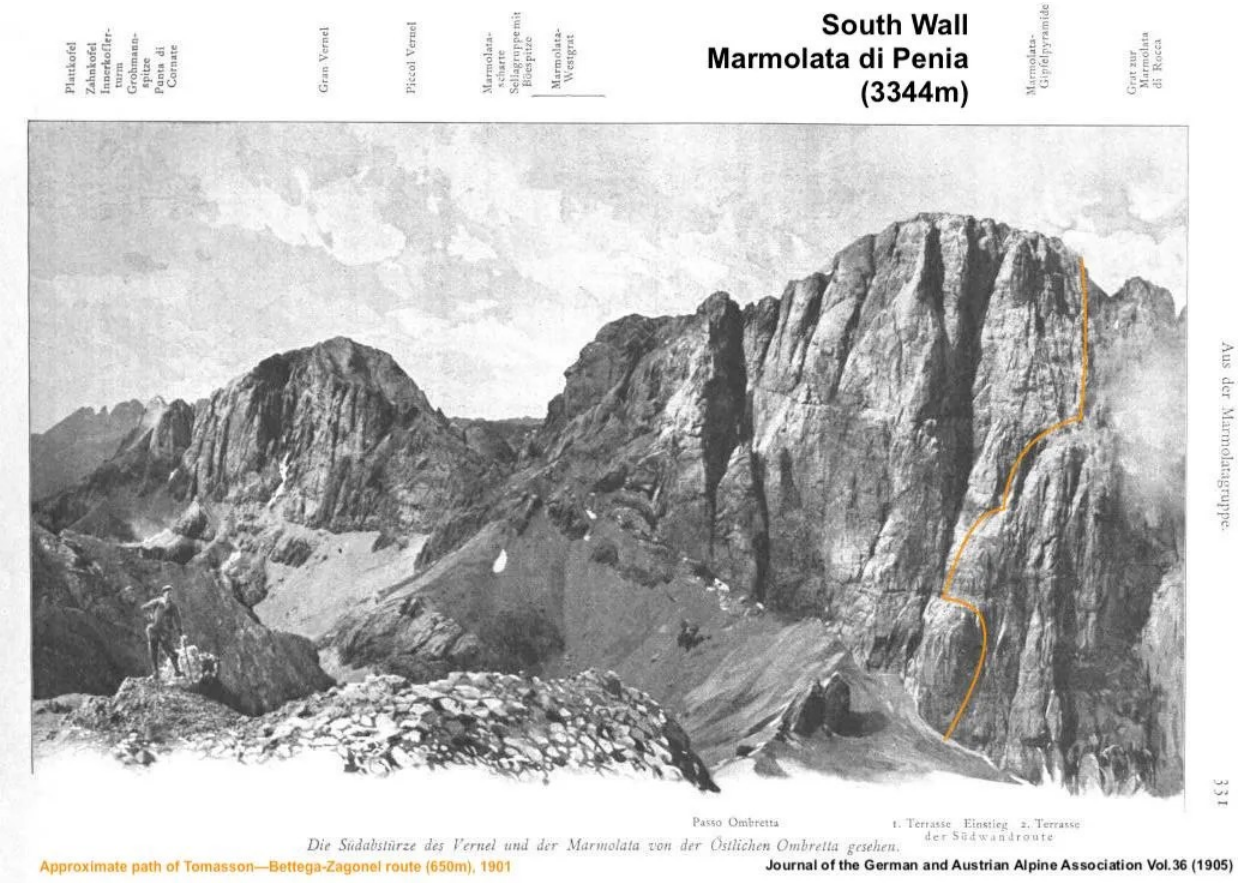
[8] Footnote: it's remarkable the original route up the south wall of Marmolata/Marmolada is not mentioned in many timelines of climbing, such as A History of Mountain Climbing, published by Arthaud in 1996, and many other histories—it is as though the first ascent of the NW Face of Half Dome, a wall similar in height, was historically ignored as a significant milestone in climbing. One of her early climbing partners, E.Strutt, reports in the 1942 Alpine Journal: "On many of these expeditions I was accompanied by Miss Beatrice Tomasson (Mrs. Mackenzie), an accomplished horsewoman and climber. In later years she achieved for the first time the two best snow and rock expeditions left in Tyrol : the E. (Sulden) face of Monte Zebrù and the S. face of Marmolata." Doug Scott provides a brief mention in his Big Wall Climbing (1974), noting that the next new route on Marmolada was not made until 1929, but this pioneering climb must be one of the most under-celebrated moments in big wall history, until a well-researched paper on Tomasson by Hermann Reisach appears in the AJ in 2001. Anette Köhler and Norber Memmel's inclusion of "Via Classica" in their Classic Dolomite Climbs (1998) also highlights this milestone route (which is still quite loose in places!).



Tomasson's line on Marmolata, first climbed in 1901 remained a testpiece bigwall for decades

126 *MOUNTAINEERING.*

Even if the proper method is adopted, there are many short bits of rock where any sudden pull might prove serious; and it is in descending rocks, more than anywhere else, that extreme care is needed not to jerk the rope.*

To go down is, generally speaking, easier than to go up, and if it is found that any given part of a mountain takes longer in the descent, it is either due to the place being in worse condition in the afternoon, to the party being a weak one, or to the rocks being unusually difficult. When hand and foothold are very scanty and very small, the descent may, indeed, be more difficult than the ascent, and special measures may sometimes be resorted to. A jump must never be risked, unless the landing-place is obviously good, and it is precisely in such places that a spare rope is so useful for the last man: doubled round a firm knob of rock it may safely be used as a banister, or even to slide down on; and, if no firm projection is to be found, a "piton"† may be employed. Such a proceeding is objected to by some as being hardly fair climbing; but it is a safeguard in case of a possible slip, and, what is equally important, it often saves time. In arranging a spare rope, care must be taken to make sure that it cannot possibly slip off the projection over which it is hitched, and also that it can be easily detached by pulling one of the ends. If badly arranged, it may get jammed by the pull in some narrow crack, to the great annoyance of the last man, who will have to return to loosen it. In such a case it is bad mountaineering to cut it and leave an end hanging, both on the score of waste, and also because the loose end may prove dangerous to a subsequent party, who may mistake it for a "fixed" rope,‡ and make use of it as such. No rope should ever be left, unless designedly fixed in a way which neither wind nor

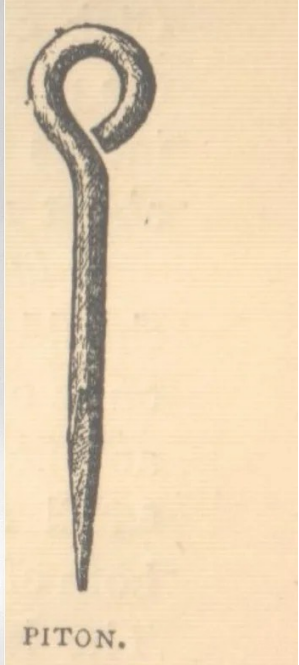
* See p. 98. † See p. 181. ‡ See below.

ROCK-WORK. 127

weather can loosen. Some prominence has been given to this matter of the extra rope; but, while it is well to appreciate its use, I do not wish to convey the impression that it is a device which should often be found necessary.

In many gullies, and in other difficult places on well-known mountains, ropes have been fixed by previous climbers; and the Matterhorn, the Aiguille du Géant, the Aiguille du Dru, and the Meije may be named among peaks which are more or less "roped." These ropes add an element of danger to the mountains, as they are often too old and rotten to be really trustworthy; they are objectionable also upon another score, namely, that they do not, as is the case when a spare rope is used, merely add to the safety and expedition of the descent, but, by making the *ascent* easy, they degrade the mountains and have a demoralizing effect by teaching mountaineers to be slovenly. To take away ropes already placed in difficult positions would be to assume considerable responsibility; and, unless done by some properly constituted authority, such an act would be most officious; but it is earnestly to be hoped that the fine rock pinnacles of the Alps which still retain, even among experts, the name of being difficult, will not be dethroned from their legitimate position by a process so unnecessary and so unsportsmanlike.

Having dealt with the various methods employed in the ascent and descent of rocks, it remains to say a few words about *traversing*. In traversing any rocks too steep and too difficult to be walked across, the body must face the mountain as in climbing up or down. Moderately good holds both for hands and feet are needed, or else there must be thoroughly good hold for either the one or the other. It is easy to edge along a shelf as broad as a mantelpiece without any handhold at all; or again, if



1893 British description of the piton. Note the record of fixed ropes in the western Alps, and the idea of pitons for descent only.

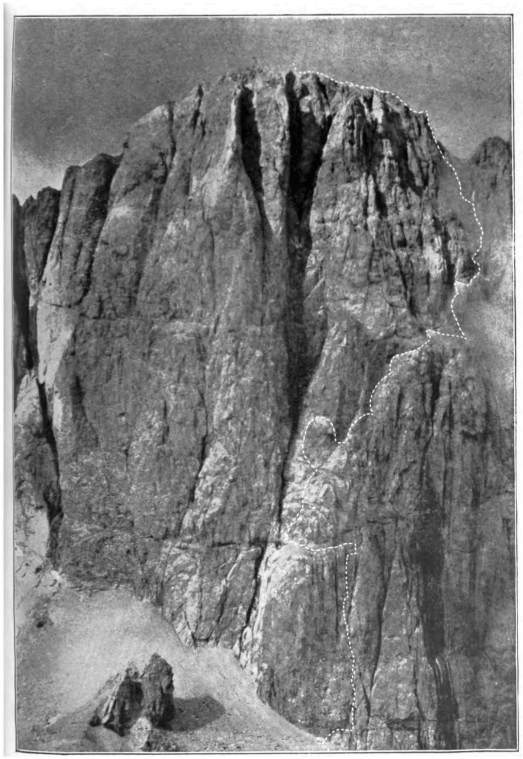


Photo by A. G. Radio-Radius Swan Electric Engraving Co.

MARMOLATA SÜDWAND

(1906 route marked)

Artificial aids of various kinds have from time to time been used in climbing mountains. The term is one of opprobrium, and is usually considered to comprise all climbing appliances other than those discussed above, and crampons will be included by many. Ladders were probably the first articles of this class to be used, and they have been found of service in crossing crevasses and in scaling difficult rocks. Rockets have, as already pointed out,† been tried for carrying a rope over a crest, but not with much success. Iron and wood stanchions have been driven into cracks, and the rock has actually been bored and blasted in order to fix them. Mr. Whymper describes what he calls a "claw,"‡ an iron hook-like instrument, to which a rope is attached : it is thrown up, or pushed up on the end of an axe, to catch on a ledge of rock above the climber's head. Other special implements have been devised for special places, but none have met with any general recognition. One article, a "*piton*" must, however, be alluded to, as having proved very useful on occasions where the descent was both steep and difficult. This consists of a strong iron nail or spike some eight or ten inches in length, with an eye at one

PITON.

* "Equipment for Mountaineers," p. 10. † See p. 124.
‡ "Scrambles amongst the Alps," p. 110.

182 *MOUNTAINEERING.*

end through which a rope can be passed. In situations where there is no projection, over which a spare rope may be hitched, this may be driven into a crack with a stone used as a hammer; and those, at any rate, who contemplate trying a new route *down* a rock mountain, will be wise to take two or three pitons with them.

5

SOUTH WALL OF THE MARMOLATA

Dr. L. and I went by way of Chambéry, Modane and Ala to Bozen, spending the night in the Hotel zur Sonne and going on the following day by the postal-coach to Welschnofen. Then we climbed the well-marked path to the Kölner Hut and crossed the Kölnerjoch to the Vajolet Hut, arriving rather late.

On the following day we did the traverse of the three southern Vajolet Towers. Up the Delago, down the Winkler. I have made this tour often. Ever anew I have been in raptures at the view of the three southern towers, especially the Delago. It seems almost incredible that one can do the Pichl-Riss! In the afternoon we climbed the three northern towers[1] for "something extra." The guides marvelled.

Next day was set aside for the east wall of the Rosengarten. But we were invited by guide Piaz[2] and his gentleman to accompany them up the south wall of the Marmolata. The plan was accepted, and we took fond leave of the Vajolet Hut and went to Pera, then by carriage to Canazai and on foot to the Contrin Hut, where Piaz caught up with us in the evening. A porter was engaged to carry our boots from the foot of the south wall across the west ridge to the summit.

We left for our difficult trip about six o'clock in the morning. There is a good path, over which one goes easily to the start of the climbing. There we gave the porter our boots. Good Luck!—on with the climb. Piaz ahead with his man; we behind him. Soon the overhanging block is reached, which is really not easy. There I went as second, behind Piaz. Then we separated our ropes again and went in two parties. Above the overhang there is some strenuous wall climbing, then the two traverses. In four and a half hours we were on the summit.

We had climbed too quickly. It gave me no pleasure. In addition, it was the most arduous tour I had made. Even Dr. Leuchs, of Munich, says that it is one of the hardest if not the most difficult ascents in the Alps. Ours was the nineteenth party. I can recommend this expedition to those who have already done the most strenuous things in the Dolomites.

We descended the west ridge, which is artificially secured. We were in the Contrin Hut by noon, going thence on foot to Vigo where we spent the night, bidding farewell to our friends, and travelling next day to Neumarkt. I parted from Dr. L., who wrote some pleasant lines in my *Führerbuch,* and went on the following morning by way of Ala and Verona to Milan.

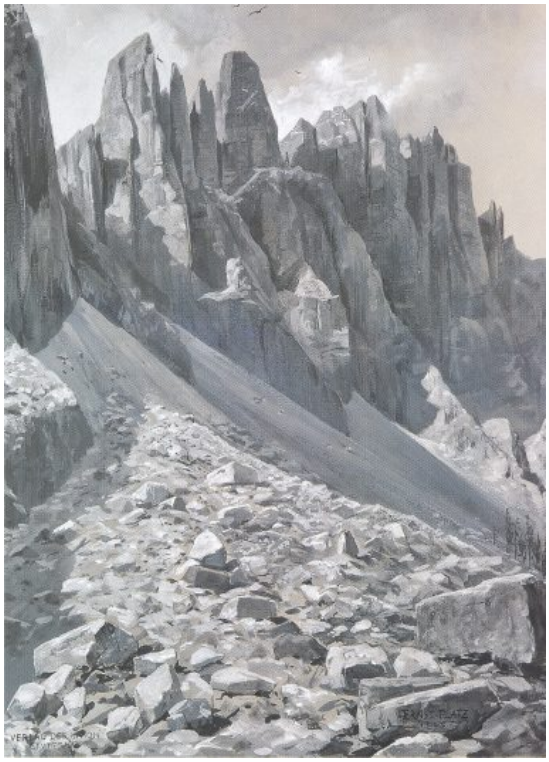
[1] The Vajolet Towers are six in number, three of them being named for their first conquerors and three for their position.
[2] According to Guido Rey, Tita Piaz, prior to 1914, had ascended the Vajolet Towers more than three hundred times.

185

from Where the Clouds Can Go, Conrad Kain, 1935

1893 Mountaineering, by Claude Wilson.

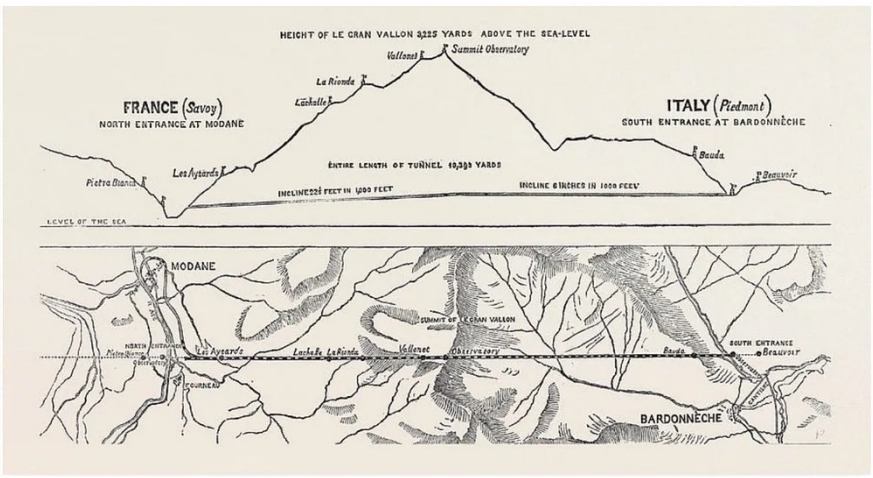
Climbing Pitons Early Evolution--part 1b--Alpine ways and artificial aids.



Ernst_Platz,_Latemar Dolomiten

Alpine Ways—the context of early pitons

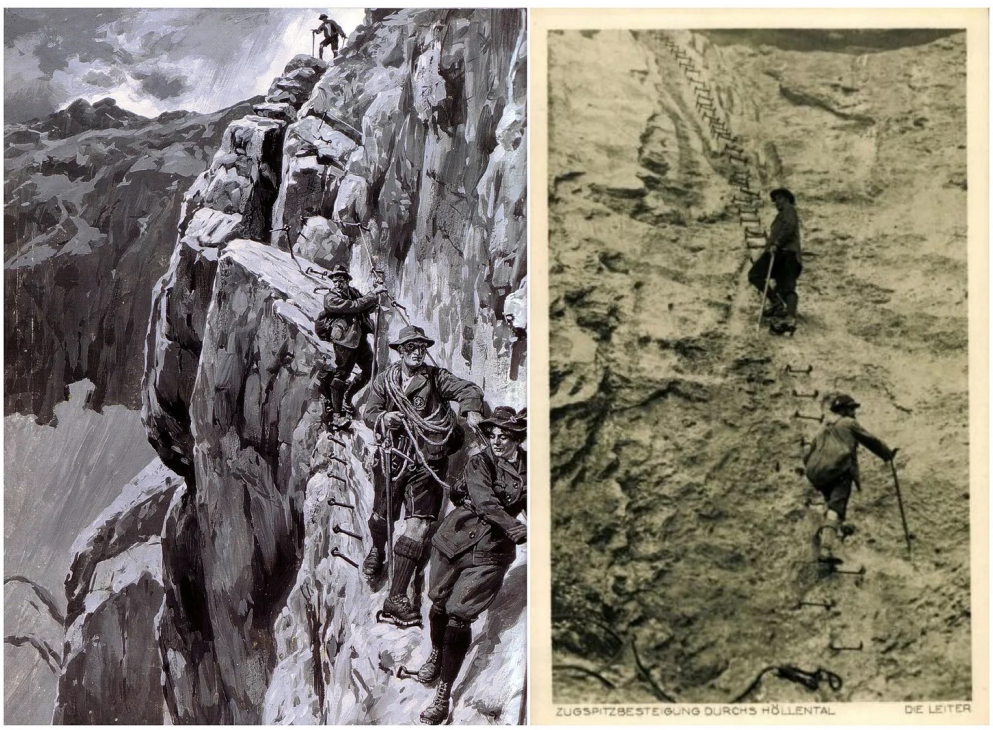
In the years before World War I, technical climbing started to branch off from other forms of alpine mountaineering, which had become mainstream in the early 1900's. The German-Austrian Alpenverein (merged in 1873) exploded in membership from less than 5000 members in 1874 to over 100,000 by the 1910's (ZDÖAV, 1919). Club Alpin Français, Schweizer Alpen-Club, Club Alpino Italiano also boomed. Comfortable huts that could sleep 50 or more were constructed in the high meadows (and even on cliffs) where there was once only a small shepherd's shack. New railroads allowed easy pan-European travels, and tunnels bored through the Alps like the Mont Cenis Tunnel (completed in 1871) allowed passage between mountain ranges that would have been a major expedition for the previous generation. No longer would legends of Hannibal's crossing of the Alps prevail when planning a trip from the lowlands —the mountain dragons were being tamed both above ground and underground.



Left: An artist's rendering shows Hannibal's long and dangerous route through the Alps. Right: Mont Cenis Tunnel.

Zugspitze (2692m)
Perhaps the “Alpine Way” is best exemplified as the progress on the Zugspitze (2692m) in the Wetterstein range in the Eastern Alps. First climbed in 1820 as a celebrated alpine climbing achievement, subsequents ascents were relatively few until an Alpenweg began in 1875. A 15m slab was equipped with an iron ladder (the 1911 guide calls it the “chicken ladder”) and a series of drilled iron rods (“Eisenstiften”) with wire cables protected a slippery traverse. In 1897 a large refuge—the Münchner Haus—was built on its summit. The accessibility of Germany’s highest mountain caused a rift in the alpine clubs as thousands of high tourists (“Hochtouristen”) swarmed the summit, with many climber/mountaineers lamenting how the Queen of the Bavarian Alps had “lost its horror”.

Footnote: these paths now differentiated from climbing routes as via ferrata (Italian) and Klettersteig (German). See also Purtscheller, “On the history of the development of the Alpinism and alpine technology in the German and Austrian Alps” (1894 ZDOAV). Of note is E. Strutt’s report on his adventures in the Eastern Alps in the 1890’s, referring to the route, “Even now, when the cliffs have
been engineered beyond all reason, the climb from the Höllental still counts as a good expedition.” (1942 Alpine journal). Similar routes up many iconic alpine peaks such as Triglav also were constructed in this era. The first cable car to the summit of the Zugspitze was built in 1926, with technology adopted from the mining industry.

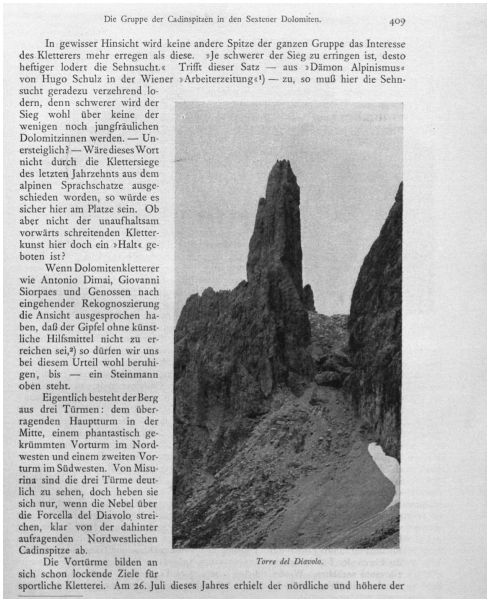


Zugspitze Höllental route. Ernst Platz painting circa 1900, and early postcard photograph of the metal ladder on the 15m slab.

Security and Artificial Aids

Installing metal bolts and wire cables to protect exposed areas and provide steps and handholds in the mountains was referred to as the 'fixing of security' ("Anbringung von Versicherungen"). "Künstliche Hilfsmittel" (artificial aid) first appears in the 1880's German-Austrian Alpine journals, which included wood ladders, ropes tossed over flakes, and even rockets fired over summits, in addition to the iron rods and cables being installed on alpine paths. Failure on a climb was often excused by suggesting the route was "absolutely inaccessible without the use of artificial aids" (1891). The debate of what constituted aid in the mountains was fuelled as more portable "securities" were developed with modern technology, and continued in the following decades.[9]

Human assistance was not considered an artificial aid, even though the rope was presumably used to pull the second up the crux. (Carl Moos)



Die Gruppe der Cadinspitzen in den Sextener Dolomiten. 409

In gewisser Hinsicht wird keine andere Spitze der ganzen Gruppe das Interesse des Kletterers mehr erregen als diese. »Je schwerer der Sieg zu erringen ist, desto heftiger lodert die Sehnsucht.« Trifft dieser Satz — aus »Dämon Alpinismus« von Hugo Schulz in der Wiener »Arbeiterzeitung«[1]) — zu, so muß hier die Sehnsucht geradezu verzehrend lodern, denn schwerer wird der Sieg wohl über keine der wenigen noch jungfräulichen Dolomitzinnen werden. — Unersteiglich? — Wäre dieses Wort nicht durch die Klettersiege des letzten Jahrzehnts aus dem alpinen Sprachschatze ausgeschieden worden, so würde es sicher hier am Platze sein. Ob aber nicht der unaufhaltsam vorwärts schreitenden Kletterkunst hier doch ein »Halt« geboten ist?

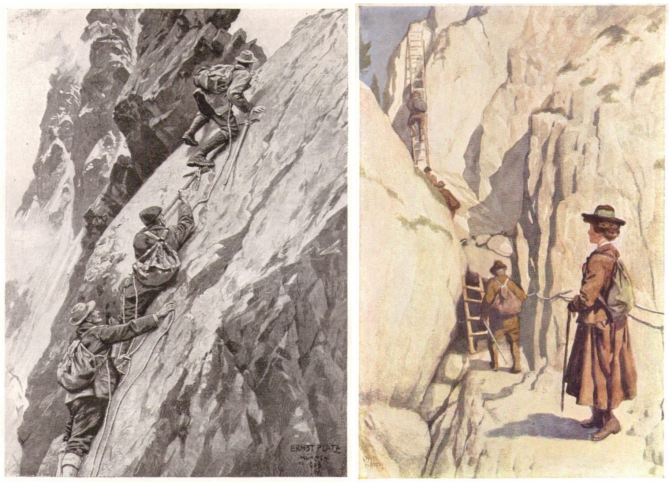
Wenn Dolomitenkletterer wie Antonio Dimai, Giovanni Siorpaes und Genossen nach eingehender Rekognoszierung die Ansicht ausgesprochen haben, daß der Gipfel ohne künstliche Hilfsmittel nicht zu erreichen sei,[2]) so dürfen wir uns bei diesem Urteil wohl beruhigen, bis — ein Steinmann oben steht.

Eigentlich besteht der Berg aus drei Türmen: dem überragenden Hauptturm in der Mitte, einem phantastisch gekrümmten Vorturm im Nordwesten und einem zweiten Vorturm im Südwesten. Von Misurina sind die drei Türme deutlich zu sehen, doch heben sie sich nur, wenn die Nebel über die Forcella del Diavolo streichen, klar von der dahinter aufragenden Nordwestlichen Cadinspitze ab.

Die Vortürme bilden an sich schon lockende Ziele für sportliche Kletterei. Am 26. Juli dieses Jahres erhielt der nördliche und höhere der

Torre del Diavolo.

Witzenmann: "For me, of course, a mountain is 'inaccessible' when it cannot be climbed in free climbing. With artificial aids - wall hooks, thrown ropes and the like - will eventually reach every rock peak."



Left: Ice axe foothold (not artificial aid)—Ernst Platz (1908). Right: wood ladders (artificial aid)—Otto Barth (1908)

[9] Discussions of what constituted "Artificial aid" reached a crescendo with the famous piton debates between Preuss, Piaz, Nieberl, Jacobi and Dülfer in the 1911/1912 Mitteilungen des Deutschen und Österreichischen Alpenvereins. Later in the 1920's, bottled oxygen and oxygen masks on high mountains is included in the long running debate of Künstlichen Hilfsmittel.

Changing attitudes to Mauerhaken
Starting in 1885, the term “Mauerhaken” (wall hook) appears in the German-Austrian Alpine Journal first as rappel anchor, then as a belay anchor, and eventually as an aid for ascent on many routes. In 1894, Purtscheller reports on the first traverse of the Meije with the Zsigmondy brothers, “One of the most terrible abseiling points is located on the Zsigmondy ridge between Pic Central and Grand Pic de la Meije, its height is thought to be around 30 m. The foot of the rock face, because it overhangs, is hidden from view. (We) overcame this point by driving a Mauerhaken into a crevice in the rock slab, wedging it firmly with stones and attaching a Seilring. Such tricks with the rope are always a bit daring; they can only be justified in those cases where there are no other means.”

But by the end of the 1800’s, three Mauerhaken were standard equipment for many German and Austrian alpinists, and fixed pitons were noted at crux sections in route descriptions. By the early 1900’s, climbers in the Eastern Alps began to openly admit the use of Mauerhaken for ascent. During an ascent of the Watzmann (Germany’s 3rd highest peak), von Frerichs admits driving a wall hook to overcome an overhang: “the rock became climbable, the terrible wall lay below us,” but then adds, “maybe this confession costs me my mountaineering reputation.”

In 1903, Fritz Eckardt from Dresden philosophised in a series on “Sporting side of Alpinism”, comparing climbing to other athletic pursuits and how many sports depend on the tools as much as the capabilities of the sportsperson (he also presciently discusses concerns of future competition). Eckardt references how aids like wire ropes, pitons, bolts, and handrails are called “unfair means” (which he writes in English presumably as a counterpoint to British ethics), yet also includes ice axe, rope, crampons and snowshoes as tools for isolated aid in the alpinist’s toolkit. In the struggle of ascent, Eckhardt emphasises how only nature dictates the necessary equipment, the “inventions of the human spirit”.

So how did these mechanical advantage devices become more portable? Piton evolution, part 1c to come!

MITTEILUNGEN
DES
DEUTSCHEN UND ÖSTERREICHISCHEN ALPENVEREINS.

Die Mitteilungen erscheinen am 15. und letzten jeden Monats. Die Mitglieder des Vereins erhalten dieselben unentgeltlich. Für Nichtmitglieder mit Postversendung: 7 K 20 h = 6 M. = 8 Fr. Preis der einzelnen Nummer 30 h = 25 Pf. Schriftleitung: Wien, 7/1 Kandlgasse 19-21. Reklamationen und Adressenänderungen sind an die Sektionsleitungen zu richten. Gesamt-Auflage 61.000.

Alleinige Anzeigen-Annahme bei Rudolf Mosse, Wien, I., Seilerstätte 2; München, Promenadeplatz 16; Berlin, SW., Jerusalemerstraße 48-49; ferner in Breslau, Chemnitz, Dresden, Frankfurt a. M., Halle a. S., Hamburg, Hannover, Köln, Leipzig, London, Magdeburg, Mannheim, Nürnberg, Prag, Straßburg, Stuttgart, Zürich.

Anzeigenpreis: 30 h = 75 Pf. für die viergespaltene Nonpareille-Zeile.

Für Form und Inhalt der Aufsätze sind die Verfasser verantwortlich.

Nr. 9. München-Wien, 15. Mai. 1903.

Die sportliche Seite des Alpinismus.

Von **Fritz Eckardt** in Dresden.

(Fortsetzung.)

III. Der alpine Sport und die übrigen Sportarten.

Wie verhält sich nun der alpine Sport zu den übrigen Sportarten, welchen Rang nimmt er unter ihnen ein? Diese Frage ist für den Bergsteiger von selbstverständlichem Interesse. Ihre Beantwortung ist aber auch geeignet, noch mancherlei über Wesen und Wert des Alpinismus zu erörtern.

Sofort fällt eine ganze Reihe von Umständen ins Auge, die den Alpinismus gegen andere Sportarten stark in den Nachteil zu setzen scheinen. Der alpine Sport ist räumlich auf das Gebirgsland beschränkt. Er erfordert viel Zeit. Der Flachlandbewohner vermag nur wenige Wochen im Jahre ihm zu widmen. Die Anforderungen an Vorbereitung, Ausrüstung und Geldausgaben sind nicht unbedeutend. Wenn nun die alpine Bewegung einer nahezu beispiellosen Entwicklung sich erfreut, so müssen es bei den genannten ungünstigen äußeren Umständen hervorragende innere Vorzüge sein, die der Alpinismus aufzuweisen hat.

Welche sind das?

Der Sport hat sich, wie wir sahen, aus der Arbeit des Naturmenschen entwickelt. Aus der bereits angedeuteten Reihe der Fortbewegungsmittel, deren sich der Sport bedient, vom menschlichen Fuß an bis zum Automobil, zur Dampfpinasse und zum Luftballon, ist ersichtlich, daß auch die Sportarten die Erfindungen des Menschengeistes verwerten. Dadurch werden sie immer mehr vergeistigt, büßen von ihrem alten Charakter des körperlichen Kampfes gegen die Naturkräfte immer mehr ein und verlieren damit von ihrem Zwecke: zu ersetzen, was unserer Berufsarbeit an gesundheitserhaltenden Momenten verloren gegangen ist. Je allseitiger also eine Sportart den Körper zum Kampfe gegen die Naturkräfte herbeizieht, desto höher steht sie. Beim Segel-, Automobil-, Schießsport ist nun von körperlicher Betätigung kaum mehr die Rede; beim Rudern, Radfahren, Reiten hängt der Erfolg mindestens ebenso vom Werkzeuge ab als von den Fähigkeiten des Sporttreibenden. Der alpine Sport ist ein körperlicher Kampf geblieben wie kaum ein anderer. Die wenigen Werkzeuge, deren er sich bedient, Eispickel, Seil, Steigeisen und Schneeschuh, bieten nur vereinzelte Hilfen, Drahtseile, Mauerhaken, Eisenstifte und Handhaben aber werden bereits als „unfair means“ bezeichnet.

Manche Sporte haben aus dem allgemeinen Kampfe gegen die Naturkräfte, wie ihn die Arbeit des Naturmenschen darstellt, nur einen so kleinen Teil herausgehoben, daß sie nunmehr nur noch eine ganz einseitige Betätigung der menschlichen Kräfte beanspruchen, z. B. Laufsport, Rudersport, Kraftsport u. a. Der Alpinismus ist allseitig geblieben, kaum das Turnen ist ihm darin über. Auf- und Abstieg, Schnee und Fels, Kamin und Wand, Spalte und Platte erfordern eine so verschiedenartige Betätigung unserer Kräfte, daß bei einzelnen Besteigungen die Technik jeden Augenblick sich anders gestalten muß. Beim Radfahren, Reiten, Hindernislauf besteht fast immer nur die eine Schwierigkeit, dem Sturze vorzubeugen. Dem Alpinisten drohen Unwetter und Kälte, Hitze und Durst, Firnlawinen und Eisbrüche, Steinschlag und trügerische Griffe. Tausendfach in Gefahr, muß er jeden Augenblick kampfbereit sein.

Der alpine Sport führt den Kampf gegen die Natur selbst und gegen die furchtbaren Hindernisse, die sie trotzig uns entgegenstellt. Wie armselig erscheinen dagegen die künstlich hergestellten Hindernisse des Lauf- und Rennsportes, wie tot gegen die lebendige Natur die Geräte des Turnplatzes.

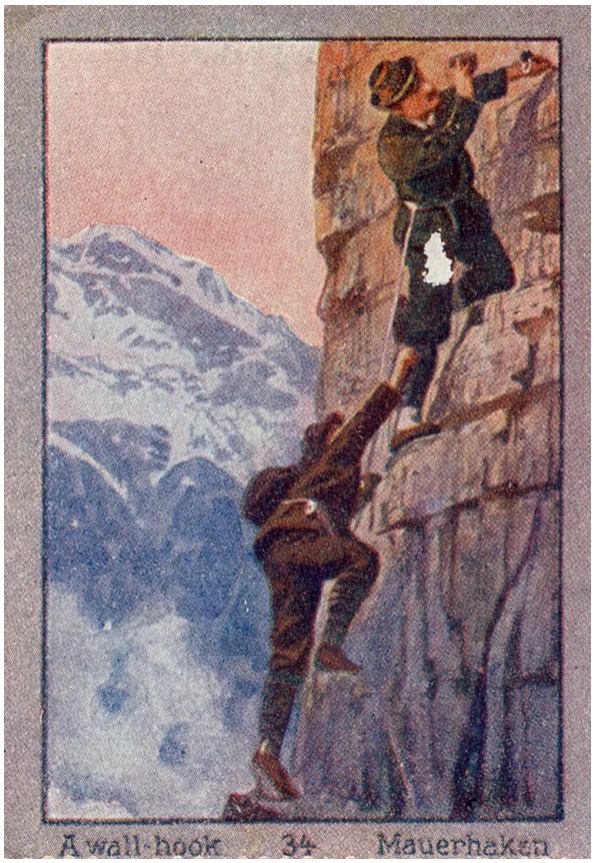
Da unsere Widerstände nur draußen in der Natur zu finden sind und sich nicht künstlich ersetzen lassen, spielt sich unser ganzes Tun in der Natur ab, und zwar dort, wo sie die erhabenste und ergreifendste

Fritz Eckardt's 1903 article in the Mitteilungen (German-Austrian Alpine Club, a precursor to the MauerhakenStreit debates, discusses the sporting side of alpinism, and makes a case for using tools such as pitons for "sporting" climbs.

Triglav, Slovenia's highest peak and national symbol, also had an early 'Iron Way') to make the summit accessible to a broader range of high-altitude tourists.

The Watzmann by Caspar David Friedrich. Germany's third highest peak, with a summit path equipped with hardware in the early era.

Climbing Pitons Early Evolution--part 1c-- Mauerhaken

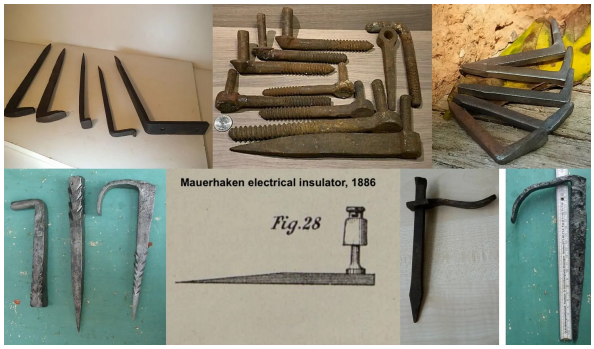


From industry tools to piton
To understand how the design of pitons evolved, we need to look at two realms outside of climbing: other industries utilising metal hardware, and the advancements in mass-produced steel technology. First, a bit about Mauerhaken:

Mauerhaken—wall hooks
In German, the general word for piton is “haken”, or hook. “Mauerhaken” (wall hook) is most common, but “Stahlhaken” (steel hook), “Felshaken” (rock hook), and “Ringhaken” (ring hook) and other forms are also used, sometimes interchangeably. Interestingly, carabiners for climbing were originally called “Karabinerhaken” (‘carabiner hooks’—more on carabiner development later). We also see “Eisenstift” (iron pin) used in the context of a hammered piton, such as the report on the ascent of the Dachstein (1876 Mittielungen), which also involved installing a ladder on route. But Eisenstift as a bolt (Bohrhaken) for a hole drilled with a drill or stone chisel soon became differentiated from Mauerhaken for cracks—more on bolts later.

Hoher Dachstein, Austria. Another 19th century piton climb.

Mauerhaken is not a term unique to climbing—any sort of masonry hook, such as those hammered between stones on stone and adobe dwellings used for attaching lanterns, cooking gear, horse reins, signs, gates, etc., going back centuries, if not millennia, were called Mauerhaken. The double Mauerhaken was a common symbol on coats of arms, to



Typical Mauerhaken used for a range of purposes and industries.

represent security built into castle walls. The early electrical engineers adopted the term for insulators on telegraph poles (1886). Fire brigades included Mauerhaken as part of their climbing equipment for brick and stone structures well before it was ever used to refer to a piece of gear used for mountaineering (1877).

English Steeplejack Fred Dibnah demonstrating the art of connecting multiple short ladders with "dogs" anchored with wedges between courses of bricks.

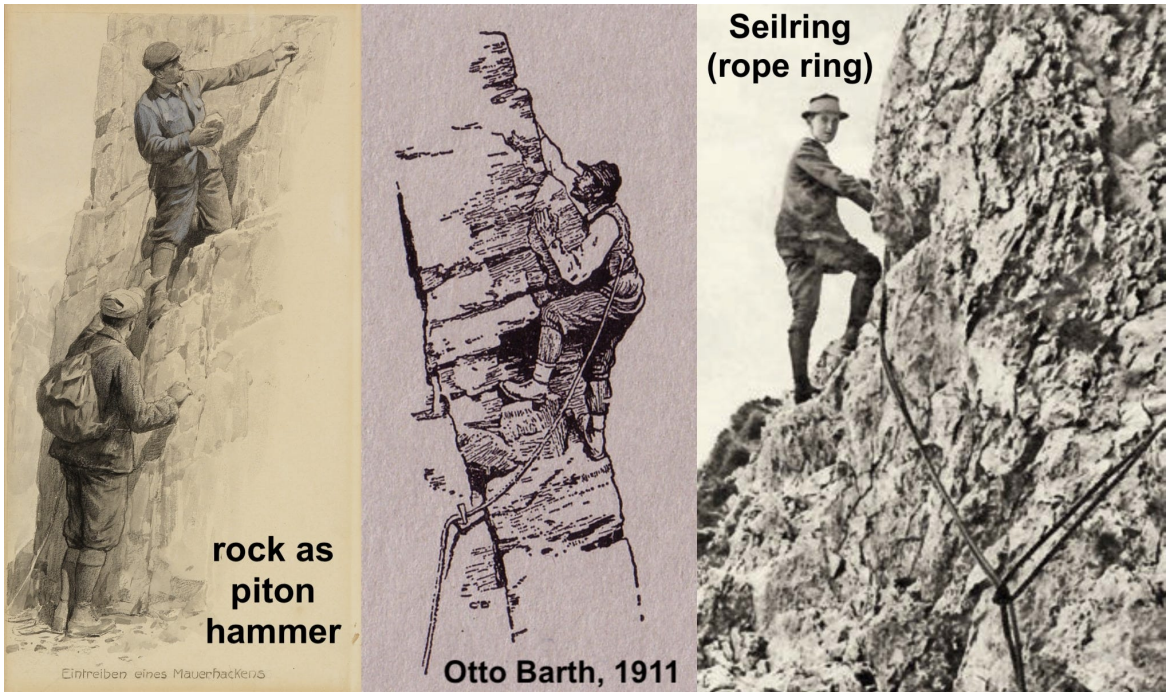
The lost art of steeplejacking also used a wrought iron wall hook, called "iron dogs" (sometimes also called "staples") for laddering up chimneys. The technique of connecting multiple ladders with hammered-in wall hooks to service tall industrial chimneys dates back to the mid-1700's and was a burgeoning professional the early climbing era; indeed, tall chimneys designed to draw pollutants high into the atmosphere rather than settling in local communities remains one of the prime symbols of the industrial revolution of the 1800's.

Early Mauerhaken were crafted by blacksmiths using hammer and forge.[10]In the days before climbing hammers and carabiners, these rock hooks were hammered into cracks with a suitable stone, used as a hand- or foothold, and as a belayed point of protection for the next few moves past the anchor. Climbers also tied the Mauerhaken into the rope system using a knotted slings of cord called a Seilring, a simple knotted loop of rope similar to how we use slings today. It was the main way to tie into anchors before carabiners[11].

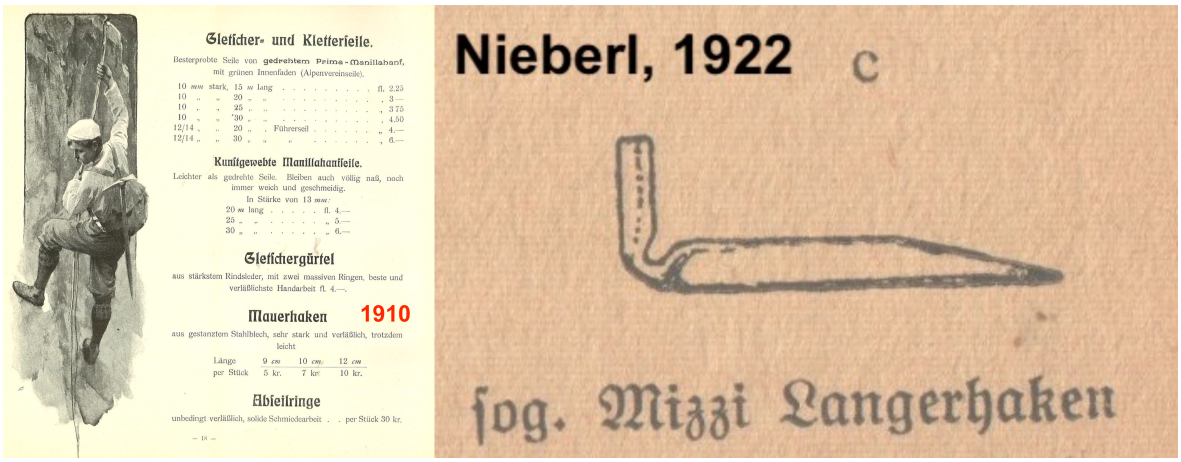
Mauerhaken attributed to Emil Zsigmondy 1880
Messner Mountain Museum Corones
Mauerhaken attributed to Robert Hans Schmitt 1890
Messner Mountain Museum Corones
Mauerhaken attributed to Paul Preuss 1911
Messner Mountain Museum Corones
Cima Brenta South Wall 1882
Campanile Basso 1904
SAT – Società degli Alpinisti Tridentini

10 Photo: Most known climbing 19th century Mauerhaken in museums are of various wrought-iron designs. Note: the Schmitt piton might be an early steel piton—like many of these early pitons, a metallurgical study would assist in their history. You can differentiate between wrought iron and steel by a grinder/spark technique and would be interesting to do on some of the late 1890s pitons, as that is when the transition from wrought iron to steel pitons takes place (mostly in the early 1900s). Precision testing the hardness of these pitons would also reveal clues of the material.

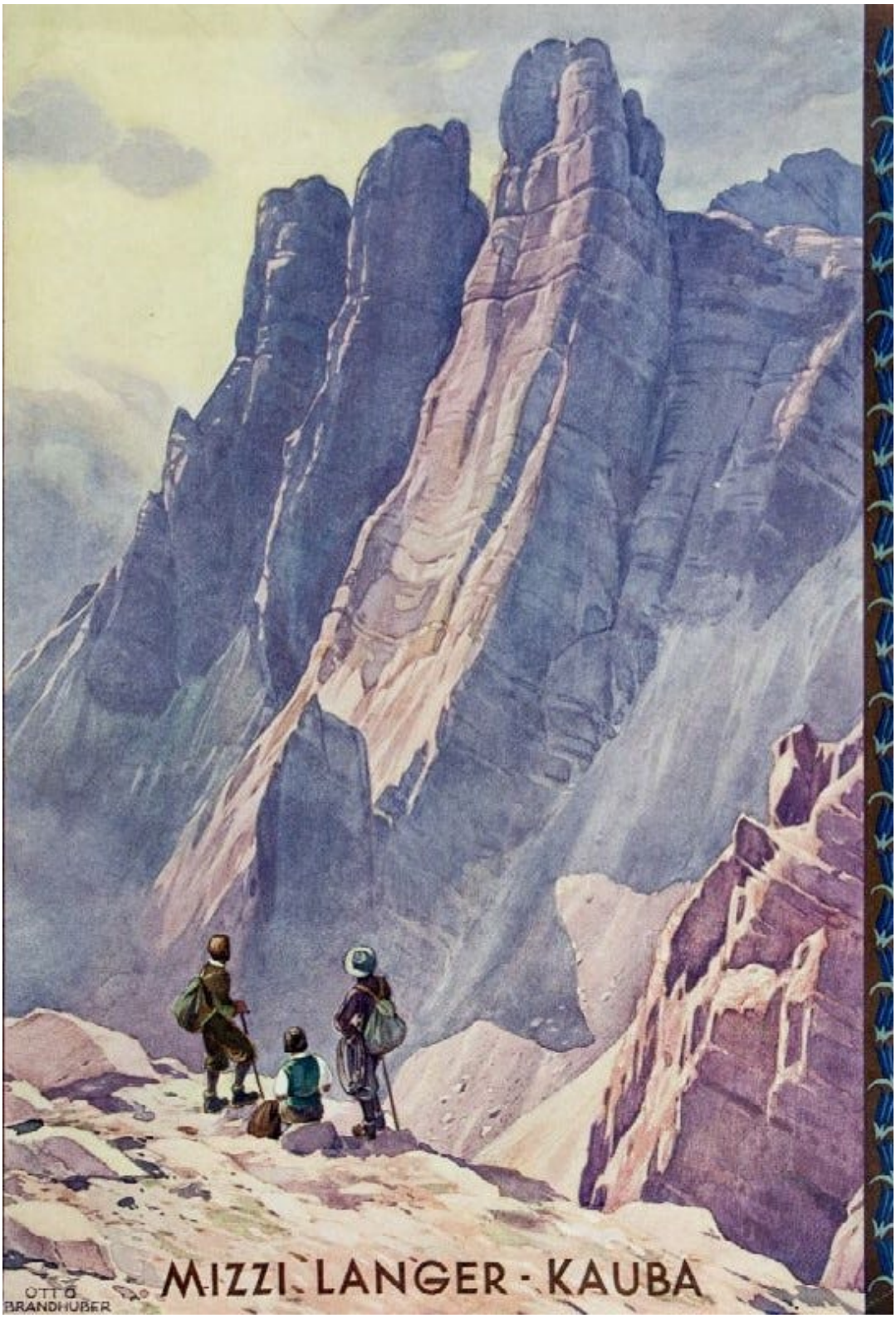
[11] Seilring ("rope ring") is often an ambiguous term in the early journals, as it applies to both metal rings primarily used for abseil anchors (primarily called Abseilring), and also to a short sling of rope (also known as rebschnur/ repshuur and later as Seilschlinge) used to connect the running rope to the pitons—more on techniques later.

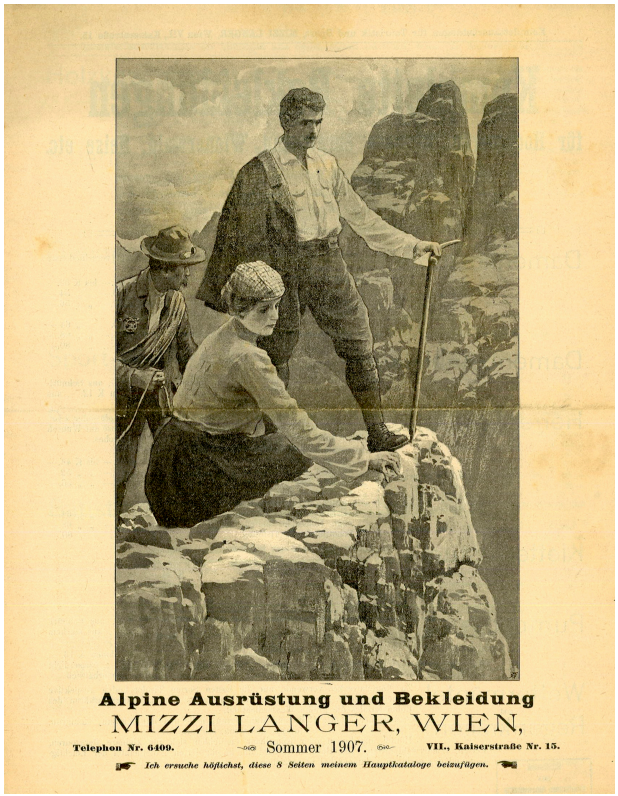


A piton being placed with a rock, and Mauerhaken used with and without slings.



In her 1907 to 1920 catalogs, Mizzi Langer sold three sizes of pitons. At least one of these pitons was the wall hook design, based on the named illustration in the 1922 "Das Klettern im Fels" by Franz Nieberl. The climbing gear listed in 1910: Rappel slings with ring (Abseil-Schlingen und Ringe); Pitons (Mauerhaken). A package of 50 Marking Papers (Marklerungsblätter) were provided free for customers--these were sheets of red paper strips, which were left at key spots of the ascent to mark a trail for descent.The 1910 catalog also lists foldable candle lanterns (Laternen) which were of an innovative wind proof design, and essential alpine equipment for early alpine starts and late night descents.


MIZZI LANGER - KAUBA
OTTO
BRANDHUBER


Alpine Ausrüstung und Bekleidung
MIZZI LANGER, WIEN,
Telephon Nr. 6409. Sommer 1907. VII., Kaiserstraße Nr. 15.
Ich ersuche höflichst, diese 8 Seiten meinem Hauptkataloge beizufügen.

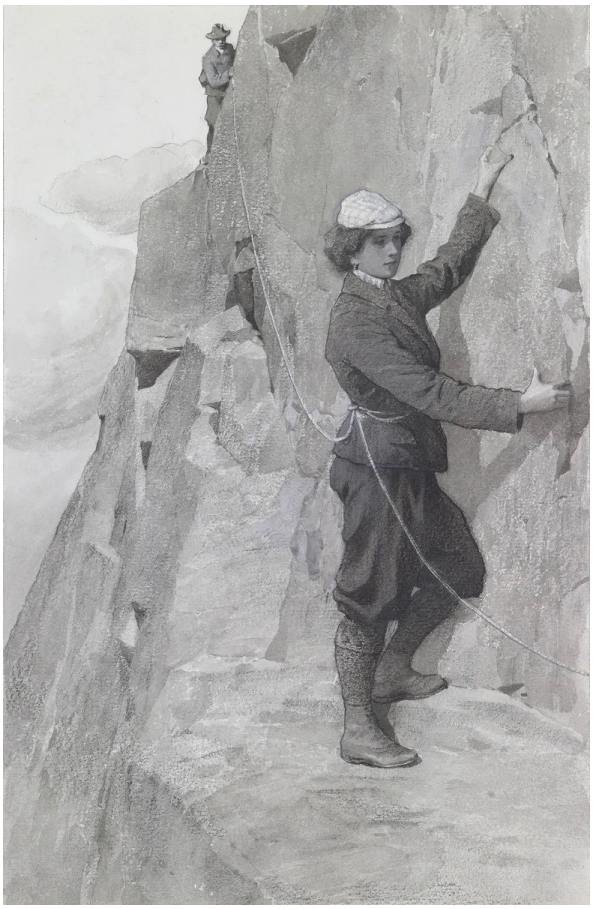
Nr. 10 Der Gebirgsfreund. XIX. Jahr
≡ Bekleidung und Ausrüstung für Bergtouren ≡
Sporthaus: MIZZI LANGER : WIEN, VII. : Kaiserstr. 15.
Telephon Nr. 6409 int.
Elegante Sportkostüme für Damen und Herren,
für Hochtouristik, Klettertouren und Reise, aus Schafwolloden, englischen Stoffen, Homespuns und Schnürlsamt. Wasserdichte Mäntel reichster Auswahl in allen Fassonen aus Erlingerloden, Kamelhaar und Himalaya-Stoff. Regenkrägen und Aermelmäntel aus Billroth- und Gloria-Batist. Sportkappen. Loden- und Plüschhüte. Touristenhemden. Wadenstutzen und Socken aus Schafwolle und Ziegenhaar. Leichtwiegende Sommer-Sweaters und Westen. Schneehauben. Tiroler Eispickel in Stubaier- und Schweizerform, Garantiemarke. Original Schweizer Gletscherpickel nur erstklassige Fabrikate. Tiroler Steigeisen, handgeschmiedet. Steirische Steigeisen von Franz Hafner, in 6-, 8- und 10zackig, anerkannt die besten. Bergschuhe aus Rindsleder. Gletscher- und Kletterseile, gedreht, kunstgewebt und kunstgeflochten. Abseil-Schlingen und Ringe. Mauerhaken. Markierungsblätter. Hochtouren-Rucksäcke. Damen-Rucksäcke. Kinder-Rucksäcke. Kletterschuhe. Schneebrillen. Kompasse. Bussole Patent Hauptmann Bezard. Aluminium-Feldflaschen, -Kochapparate, -Trinkbecher, -Proviantdosen etc.
Bitte illustrierten Katalog zu verlangen.

Mizzi Langer advert. Mauerhaken ("Wall hooks") made specifically for rock climbing. advertised for the first time in Gebirgsfreund (April 1908)

Gustav Jahn, an accomplished alpinist and artist, captured the alpine zeitgeist with his seasonal illustrations in the Mizzi Langer catalogs.

Mizzi Langer -- first advertised rock climbing pitons (Mauerhaken)

Marie Langer (1872-1955) was an Austrian rock climber, a medal winning ski racer and alpinist. She ran and managed the first dedicated climbing gear shop in Vienna from from 1900 to the 1930's.

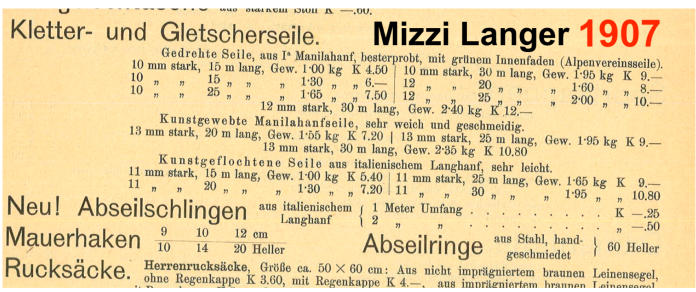


Mizzi Langer 1910 by Gustav Jahn

Mizzi's city shop offered all the latest equipment for the alpinist and skier, including well-designed women's outfits for the mountains, distinct from the petticoat style in the UK, and advertised as "Sporty and Functional". Her catalogs showing

women in the lead inspired a generation of women alpinists in an era when few national alpine clubs allowed women to join their associations. The main Klettergarten (local crag) in Vienna is named after her.

The pre-war years in the Eastern Alps was a time of heroic climbs up previously unimaginable limestone cliffs, the sheerer and more spectacular the better. Spires and peaks were often eponymously named by their first ascentionists, who became local and national heroes. The Mizzi Langer shop in Vienna supplied many of these climbers with all the gear they needed.



Kletter- und Gletscherseile. **Mizzi Langer 1907**

Gedrehte Seile, aus I[a] Manilahanf, besterprobt, mit grünem Innenfaden (Alpenvereinsseile).

10 mm stark,	15 m lang,	Gew. 1·00 kg	K 4.50	10 mm stark,	30 m lang,	Gew. 1·95 kg	K 9.—
10 „	„ 15 „	„ „	„ 6.—	12 „	„ 20 „	„ „	„ 8.—
10 „	„ 25 „	„ „	„ 7.50	12 „	„ 25 „	„ 2·00 „	„ 10.—
		12 mm stark,	30 m lang,	Gew. 2·40 kg	K 12.—		

Kunstgewebte Manilahanfseile, sehr weich und geschmeidig.
13 mm stark, 20 m lang, Gew. 1·55 kg K 7.20 | 13 mm stark, 25 m lang, Gew. 1·95 kg K 9.—
13 mm stark, 30 m lang, Gew. 2·35 kg K 10.80

Kunstgeflochtene Seile aus italienischem Langhanf, sehr leicht.
11 mm stark, 15 m lang, Gew. 1·00 kg K 5.40 | 11 mm stark, 25 m lang, Gew. 1·65 kg K 9.—
11 „ „ 20 „ „ „ 1·30 „ „ 7.20 | 11 „ „ 30 „ „ „ 1·95 „ „ 10.80

Neu! Abseilschlingen aus italienischem Langhanf { 1 Meter Umfang . . . . . K —.25 / 2 „ „ . . . . . „ —.50

Mauerhaken 9 / 10 — 10 / 14 — 12 cm / 20 Heller

Abseilringe aus Stahl, handgeschmiedet } 60 Heller

Rucksäcke. Herrenrucksäcke, Größe ca. 50 × 60 cm: Aus nicht imprägniertem braunen Leinensegel, ohne Regenkappe K 3.60, mit Regenkappe K 4.—. aus imprägniertem braunen Leinensegel

1920

Mauerhaken.

Fig 40. Aus gestanztem Stahlblech, sehr stark und verläßlich, trotzdem leicht.

Länge	9	10	12 cm
per Stück	10	14	20 h

1929

Mauerhaken.

Stubaier Mauerkaken, Schmiedearbeit, 14 und 16 cm lang, hoch- und flachkantig . . . . . S —·30

Fiechtlhaken, original-deutsche Schmiedearbeit, 12 und 14 cm lang, hoch- und flachkantig . . . . . „ —·60

1931

Mauerhaken.

Stubaier Mauerhaken, Fiechtlhaken, Schmiedearbeit, 14 bis 16 cm lang, hoch- und flachkantig . . . . . S —·40

1937

MAUERHAKEN

Stubaier Mauerhaken, Fiechtlhaken, Schmiedearbeit, 14 bis 16 cm lang, hoch- und flachkantig . . . . . S —·40
Karabinerhaken, flach, nur mit Loch für den Karabiner . . . . . „ —·50
Messerhaken, flach zugeschmiedet, in hoch- und flachkantig . . . . . „ —·60
Neue Modelle von Mauerhaken stets lagernd, auf Wunsch auch gewissenhafte Anfertigung nach eigenen Angaben, billigst berechnet.

ABSEIL-RINGSTIFT

Starker, handgeschmiedeter Stift mit beweglichem Ring, absolut verläßlich . . . . . S 1·—

ABSEIL-RING

Geschmiedeter Ring, innerer Durchmesser 40 mm, Stärke 9 mm . . . . . S —·40

ABSEIL-HÄMMER

Aus Stahl geschmiedet, starker Holzstiel, mit Lederhandschlaufe, Gewicht 450 g . . . . . S 2·20
Sixt-Kletterhämmer, zwei Modelle, doppelseitig Stumpfhacke oder einseitig Spitzhacke . . . . . „ 3·20
Ganz schwerer Spezial-Hammer . . . . . „ 4·—

SICHERUNGS-KARABINER

Aus starkem Stahl, in Normalgröße 100 × 10 mm,
In rundoval oder spitzoval . . . . . S 1·30
Neuer, extrastarker Karabiner, gewährt erhöhte Sicherheit . . . . . „ 2·50
Derselbe mit Sicherung des Schnappverschlusses . . . . . „ 3·20

EISHAKEN

Für schwere Eisturen:
aus Stahl geschmiedet, 30 cm lang . . . . . S 1·30
Spezialhaken, bester Stahl, 30 cm lang . . . . . „ 2·30

MARKIERUNGSBLÄTTER

Bestehend aus grellroten Papierstreifen, bei Kletterturen zur Orientierung für den Abstieg ein wichtiger Behelf. In Päckchen zu 25 Streifen. — Jeder Kunde auf Verlangen kostenlos.

29

Mizzi Langer Catalog pages: In the 1907 to 1920 catalogs, Mizzi Langer sold three sizes of pitons. At least one of these pitons was the wall hook design, based on the illustration in the 1922 "Das Klettern im Fels" by Franz Nieberl. Considering the price differentials of the three lengths of pitons sold by Mizzi Langer during this period, the three pitons sold might have been different designs). Note the varied types of pitons available in 1937, including a specific Karabinerhaken: "flat, only with a hole for the carabiner".

Seite 84. Der Gebirgsfreund. Heft 6.

TURISTEN-AUSRÜSTUNG

SPORTHAUS
MIZZI LANGER-KAUBA
WIEN, 7., KAISERSTRASSE 15

Ausrüstung und Bekleidung für Bergturen in größter und bester Auswahl.

***

Elegante Sportkostüme für Damen und Herren, wasserdichte Mäntel aus Loden und Kamelhaar, Gummimäntel, Bilrothmäntel, Bergschuhe bester Handarbeit, Wadenstutzen und dicke Socken, Lodenhüte und Sportkappen, Turistenhemden, Sportblusen, Kletterschuhe, Tiroler Eispickel, steirische Steigeisen, handgeschmiedet, Gletscher- und Kletterseile, Hochturen-Rucksäcke mit breiten Riemen, Aluminium-Proviantdosen u. Kocher, alles übrige Rüstzeug für Bergsteiger.

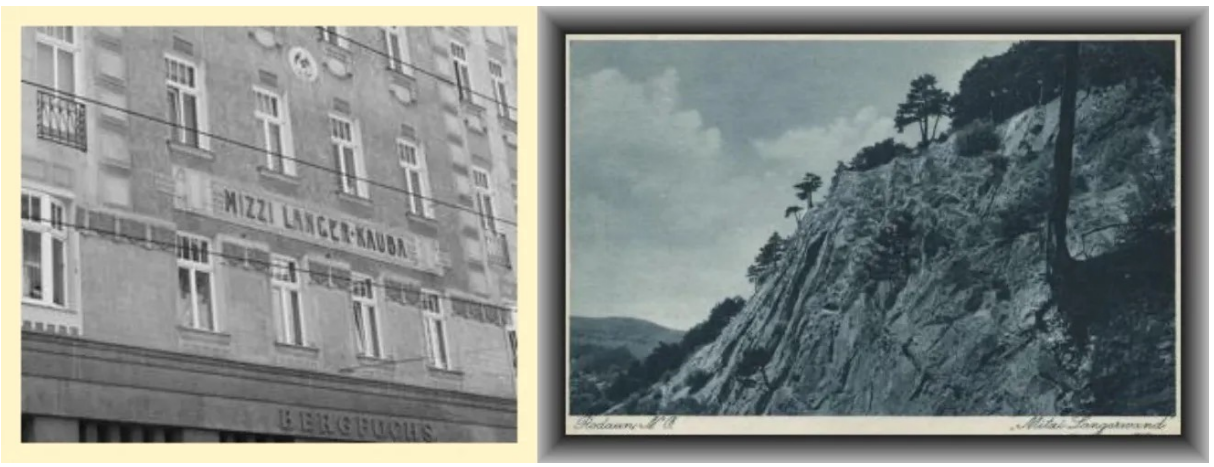
MIZZI LANGER

Mizzi Langer catalogs contained in their pages not only all the latest equipment for sale, but also tips on the most modern skiing and climbing techniques. Gustav Jahn, an accomplished alpinist and artist, captured the alpin zeitgeist with his seasonal illustrations: beautiful pristine ski fields in the winter, and the mountain experience in the summers.

The Mizzi Langer catalogs were highlighted in the 1905 Mittielungen (a noted exemption of an "understandable rule" of the German-Austrian Alpine club not to endorse businesses), thanks to the artwork of Gustav Jahn, and technique articles by noted adventurers Hanns Barth and M. Zdarsky[12].

The Austrian National Library has preserved Mizzi Langer's shop advertisements in the monthly periodical "Der Gebirgsfreud" (The Mountain Friend), which reported on a range of mountain activities from 1890 to 1941.

Although pitons had been adopted from other industries, or manufactured for climbing purposes by local blacksmiths, the ready availability of store-bought hardware equipped a new generation of climbers who expanded the standards of big walls of the era, and a main focus of this series.



Mizzi Langer-Kauba sign on original shop building, and the Mizzi Langer Klettergarten

[12]Zdarsky was also probably the inventor of the Zdarsky tent, the first hanging tent for steep ice and snow routes (2-point).

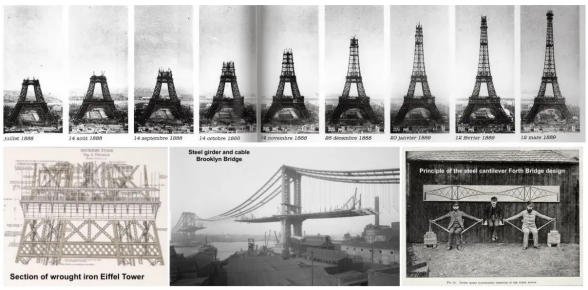
Climbing Pitons Early Evolution--part 1d--the rise of steel and inline pitons.

The Rise of Steel

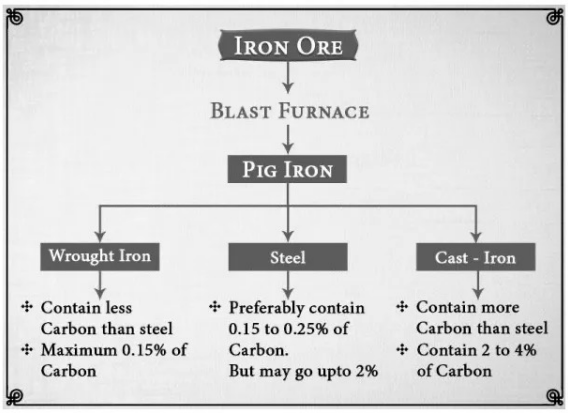
With the advent of cheap, hardenable steel by the early 1900's, pitons really came to fore as a useful climbing tool that allowed new standards of human endeavor on the vertical to be expanded. Most, if not all pitons used for climbing before 1900 were made of wrought iron, rather than steel, and were rather thick and heavy affairs; a lighter, stronger, and thinner piton was the next step in gear evolution. For the purposes of studying early pitons, three types of iron products need to be understood:

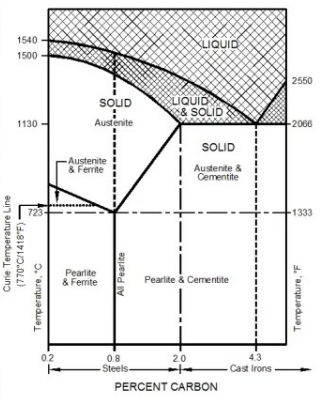
- **Wrought iron**: very low carbon steel, most common form in mid-1800's, and the standard blacksmith's material. Not heat treatable but can be case-hardened. Soft: thin sections would be unsuitable in the context of a hammered piton.
- **Mild Steel**: low carbon, heat treatable. Available in sheet form by the 1900's.
- **Cast Iron**: iron with high carbon--very brittle and shatters when hammered. Used for ornamental or pure compressive structural applications.

Material science iron/steel basics.
Note: even though "soft-iron" pitons is a common term to refer to piton material, such pitons are actually mild steel.
Steel goes back to the earliest times of the "Iron Age" (and likely before, from meteorites), though the science of iron additives was more based on often secret processes rather than an understanding of chemical elements. The smelting and forging process of Japanese maraging steels—known for both strength and toughness—used to make swords a thousand years ago is still not fully understood from a materials science standpoint, for example. The history of iron and steel is the story of western civilisation; new mines were a major incentive of the Roman's expansion, and the story of European power shifts and America's rise in the 1900's align with the rise of steel and energy technology and production.


Section of wrought iron Eiffel Tower
Steel girder and cable Brooklyn Bridge
Principle of the steel cantilever Forth Bridge design

Eiffel was a big fan of wrought iron, but the subsequent engineering marvels were all made of steel.


IRON ORE
BLAST FURNACE
PIG IRON
Wrought Iron
Steel
Cast - Iron
Contain less Carbon than steel
Maximum 0.15% of Carbon
Preferably contain 0.15 to 0.25% of Carbon. But may go upto 2%
Contain more Carbon than steel
Contain 2 to 4% of Carbon

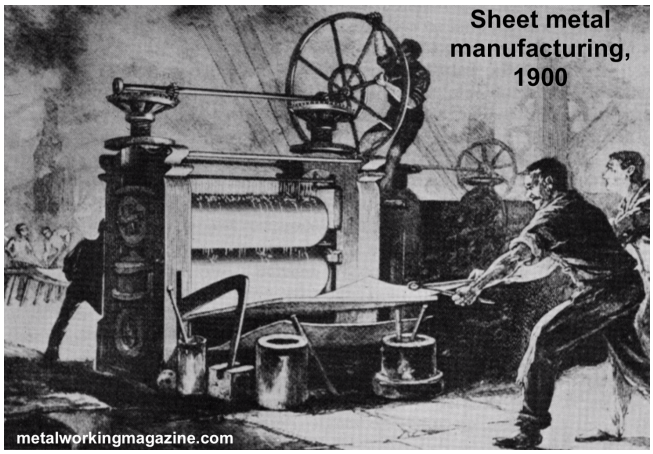


Material	Percent Carbon	Characteristics & Applications
Wrought Iron	< 0.008	Very soft material.
Low-carbon Steel	< 0.30	Also called *mild steel* or *machine steel*. Does not contain enough carbon to be hardened, but can be case hardened. Used for parts, which do not need to be hardened, like nuts, bolts, washers, sheet steel, and shafts. Also used in structural steel and machine tool frames.
Medium-carbon Steel	0.30–0.60	May be hardened. Used where greater tensile strength than low-carbon steel is needed. Used for tools like hammers, wrenches, and screwdrivers, which are drop-forged and then hardened.
High-carbon Steel	0.60–1.7	May be hardened. Also known as *tool steel*. Used for cutting tools, punches, taps, dies, reamers, and drills.
High-speed Steel (HSS M2)	0.85–1.5	Hardenable. Used for lathe and milling machine cutting tools and drill bits. Retains hardness and cutting edge at red heat. This is the least costly member of the HSS family. See Table 10-2 for details on the alloying elements of all the HSS alloys.
Cast Iron	> 2.1	Cannot be hardened, but available in several forms with differing properties.

Table 10–1. Carbon content of major iron-containing metals.

Steel becomes widely available, 1900s
Before the invention of the Bessemer and Siemens steel mass-manufacturing methods in the mid 1800's, most steel was made in a crucible in very small quantities ~50kg at a time; thus steel was expensive and only used for specialist applications, with the UK, Sweden and Russia being the largest producers (in areas with large forests). In 1850, with charcoal as the main fuel source and global deforestation reaching a peak, output was measured in tens of thousand of tons per year: Britain, the world's largest steel producer, was making 50,000 tons of steel per year.

By 1900, steel was made primarily with coal and output was measured in millions of tons per year: Germany, the world's second largest producer (after the US), was making 4m tons of Bessemer steel and 1.5m tons of Siemens steel per year. Wrought iron supply, largely from Sweden, dwindled to negligible quantities. Wrought iron feats of human engineering like the Eiffel Tower were superseded by steel high-rises and engineering marvels like the Brooklyn Bridge in New York and the cantilevered Forth Bridge in Scotland. The Iron Age had given way to the Steel Age.



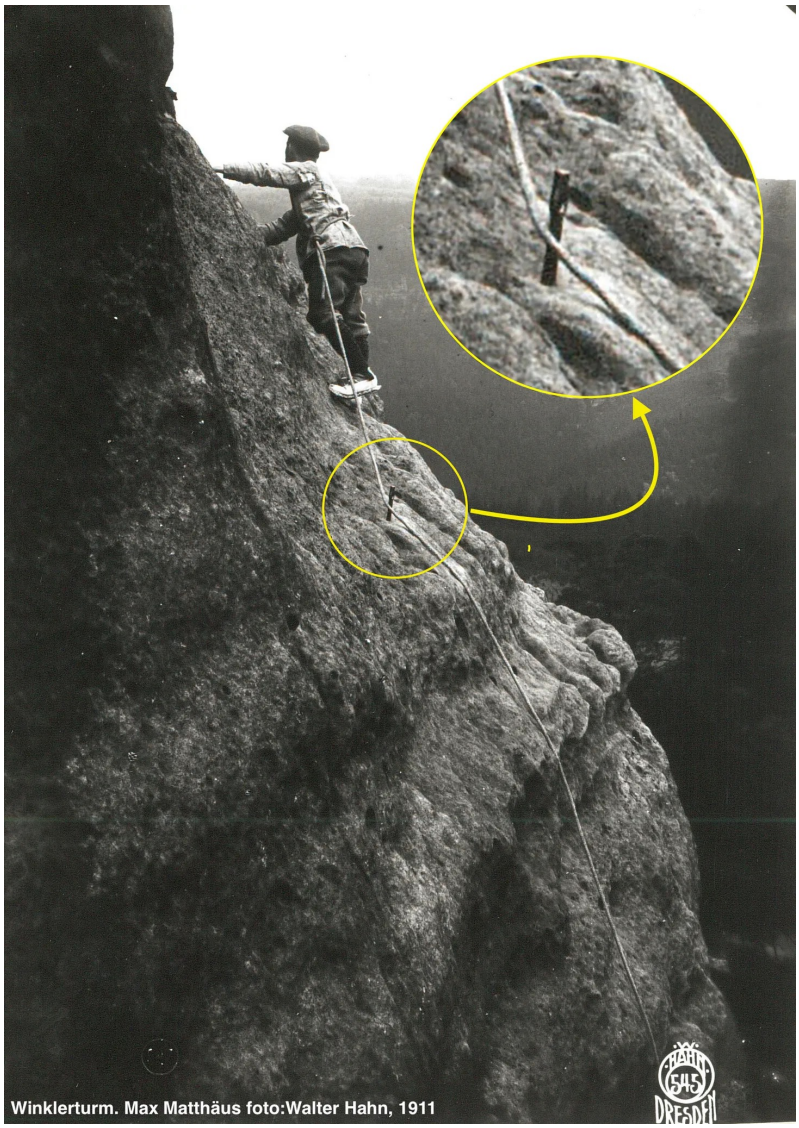
Inexpensive sheet steel, strengthened by the rolling process, would have become widespread in the early 1900's. A reference to a steel piton ("Prima-Stahlhaken") appears in a 1907 journal. The earliest reference to Fiechtl pitons appears in the 1920 Mitteilungen des Deutschen und Österreichischen Alpenvereins and based on the design and specification, these pitons are most likely cut to rough shape from sheet steel, rather than originating from a billet, then the taper and eye punched using forging techniques. Steel horizontals also appear in the early 1920's, the process for making these will be covered in the next chapter.

Typical blacksmith tools and shops of the era. Hard to imagine high voltage electricity or acetylene tanks making steel welded rings in these village smithy's, where most metal climbing gear originated in the early era.

Nr. 599. Kletterhammer aus bestem Material, stumpf oder spitz-stumpf, Gewicht 600 gr S 2.40
Nr. 600. Derselbe Hammer nur stumpf, 1 kg schwer . . . . . S 4.50
Nr. 601. Seilkarabiner, nur Ia Material, rundoval od. spitzoval, 10 cm Durchm., p. Stück S 1.50
Nr. 602. Fichtl-Haken, handgeschmiedet, für Längs- und Querrisse . . . . . S –.40
Nr. 603. Mauer- oder Eishaken mit losem Ring, handgeschmiedet, per Stück . . . . . S 1.50
Nr. 604. Abseilring, geschweißt . . . . S –.50

1935 Sporthaus Peterlon catalog, and similar Mauerhaken in the Club Alpino Italiano museum. Commercial steel Mauerhaken of this type were made well into the 1930's by Sporthaus Schuster.

There are many early pitons of unknown origin in climbing museums around the world; with metallurgical knowledge, such early pitons could be better identified with a hardness tester and by examining the grain structure of the steel using a file, an acid surface treatment, and a magnifying lens in order to identify the composition and approximate era of the manufacturing process of the early steel pitons.



Right: Early piton designs were also informed by early bolt designs, such as those used in the Elbsandsteingebirge.

Early ring pitons and the inline-eye piton design

Evolving from eyebolts, such as the type George Anderson used on Half Dome, and would have been a common rock anchoring tool during the industrial era, pitons with rings appear.

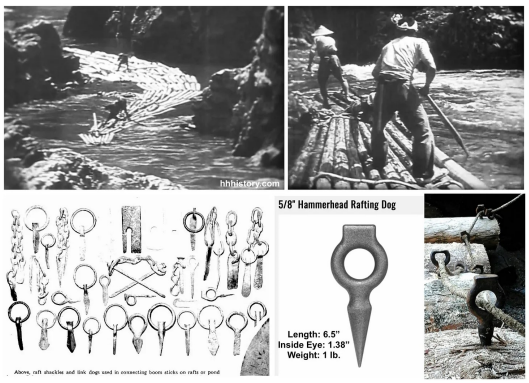
Eyebolt attributed to trail builder George Anderson, Yosemite Climbing Museum
(reported as 16mm diameter and 100mm long)

Eyebolts and ring bolts like these would have been standard parts made for purposes other than climbing. Ring pitons made for climbing were not especially common during this period compared to Mauerhaken.

Even though there were many designs of masonry wall hooks with rings for hanging items on walls, perhaps tying up a horse, most of these early tools with rings would not have been strong enough for climbing applications. Forge-welding rings with hammer and anvil is a laborious process, and there is little evidence of any wrought iron pitons that were custom made for climbing with a forged ring, as the technique of tying off a fixed piece of protection with a short loop of rope was the standard practice of the day, when dynamic lead falls was not an option, and a low-friction metal ring was not required.

Left: Ringhaken appear in "Das Klettern im Fels", Nieberl, 1909. Very similar to the tools made for lashing together log rafts in that era.

Ringhaken ('Ring hooks') as a climbing tool appears in the 1909 Nieberl, "Das Klettern im Fels" (which, by the way, is an excellent resource for studying climbing gear evolution, as there were a number of updated editions every decade into the 1950's), as well as in a series of illustrations by Carl Moos. Most of these pitons are identical to tools used by loggers to lash log rafts together. The rings appear spot-welded, rather than forge-welded, so would have likely been made in a factory rather than a local blacksmith's shop.

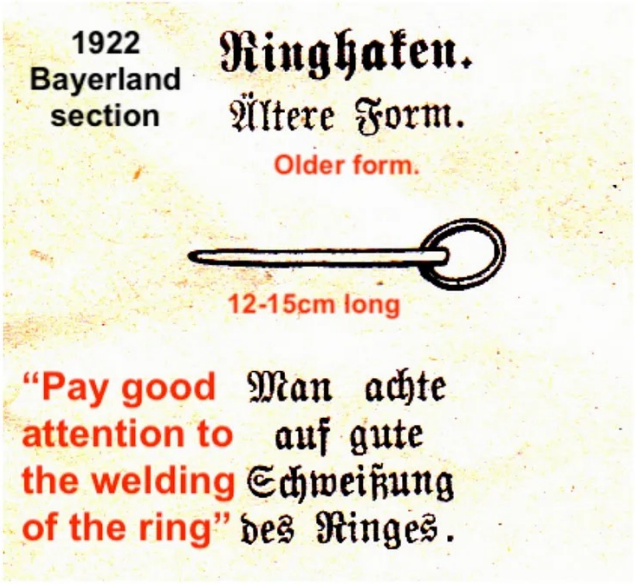


Steerable logging rafts lashed together with log dogs and shackles, and various log dogs from early 20th century, and a modern rafting dog. The 5/8" hammerhead is of an old design and has an eye design similar to the early bolts used in the Elbsandsteingebirge. Perhaps a similar industry tool had been custom modified by a smithy for climbing.

Notwithstanding the known use of pitons with an integrated rings in the early piton era, the term "Ringhaken" does not appear frequently in the old German-Austrian journals. There is a mention in 1905 ("to drive wall hook with ring so firmly, the rope is pulled through, we can finally calm down") and in 1910 as a point of abseil on the Breche du Perron traverse by O. Meyer. Pitons with a ring were primarily intended as rappel anchor pitons. More options of thickness and lengths of ring pitons appear

Carl Moos: "Securing the second in case of poor stance"

Carl Moos: "Securing the first with Mauerhaken"



Carl Moos illustrations from the 1922 "Das Klettern im Fels" and an image from the 1922 Bayerland section of the German Alpine Club (courtesy Hermann Huber).

in the years before WWI and then more frequently in the 1920's and 1930's when Sporthaus Schuster began selling ringed flat pitons, but soon after the term fades from the German-Austrian records as most piton types just become known in the literature as generic "Haken" (or "Felshaken"—rock hook). Ring pitons—a ring on a flat blade of varying lengths and thicknesses as a protection piton—become more common in the 1910s as access to better steels and electric and gas welding becomes more common.

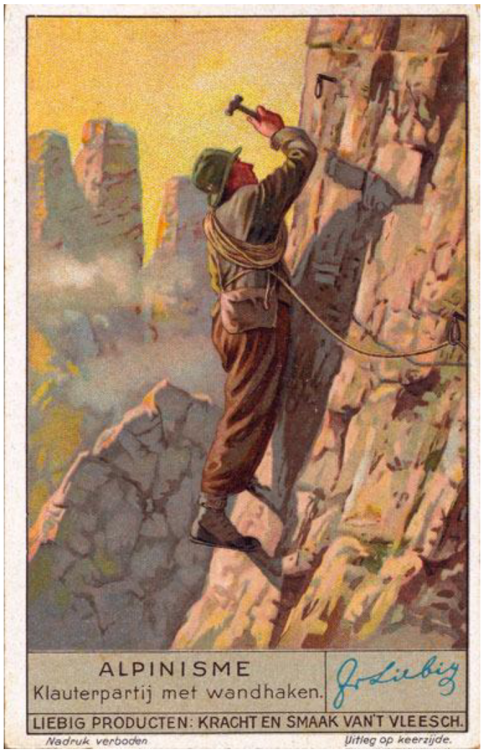
The early journals have frequent references related to "Haken mit Seilring" (hook with rope ring)—but these are not ring pitons—a Seilring (rope ring) is actually a piece of cord, tied or looped around the piton and the rope, and often used as an aider for pulling on and also stepping into—sometimes referred wryly as a "noose" as climbers bypassed a section "von Seilring zu Seilring" (aiding up a line of fixed gear—modern climbers call it a 'cluster**k' when tangled in webbing and rope). Eisenrings—separate iron rings that were readily available as a stock hardware item—were primarily used for descent and will be covered in a future abseil tools and technique article. In the era before carabiners, straight pitons with a larger eye, similar design of non-ringed log dogs of the era, that would allow a thick short cord to be easily passed through the eye were more likely the preferred piton. Pitons with a large inline eye first appear in the Elbsandsteingebirge as bolts (see the end of this volume for more on Dresden climbs).

Hoher Torstein, Nauer Nordweg, 1934
"The right one I would consider the original ring from 1934, the left one is the replacement"
—Jörg Brutscher
"iron pin torn out in 1995 accident on "Talwächter" route "Uferweg". It probably originates from the first ascent of Otto Ufer in 1881"
—Matthias K

Left: Inline piton that can be used with vine cord (though it might be this piton originally had a ring). Right: another example (a later era) of an inline piton.

The origin of the inline piton design is unknown—they might have been made specifically for climbing, or possibly modified from other tools.
Rather than ring pitons, the evolutionary link between the original Mauerhaken and the modern piton is perhaps closer related to the long piton design with a large inline eye. These might have originally been loggers' tools and modified to become the early bolts used in the Elbsandgebirge, or flattened by a smith to become a thin piton. This design would have been a more versatile and safer wrought iron or steel piton in the pre-carabiner days when Seilrings were the standard method of attachment, compared to a ring piton with a connected eye of unknown strength. Only a few examples of old inline eye pitons appear in museums, of note is an interesting piton of unknown origin in the Italian National Museum:

Carabiner evolution will be a separate study in this series, but the oft-cited idea that the piton/carabiner synergy begins in 1910 is a bit more nuanced—carabiners as a specific climbing/mountaineering tool date back to at least 1898—but it was rare for a climbing team to have more than three carabiners, mostly used for specific body-weight tasks, even well into the 1920's. Cords were the primary means of connection, and designers of the era discuss smoothing and rounding of the piton eye well to ensure there are no sharp edges to damage the attachment cord (more on the early designers and breakthroughs using carabiners and other gear innovations later, of course).
Regardless of method of attachment, what was really missing in the early 1900's was a thin piton that would be strong and light. A flattened wrought iron spike would have been weak and tend to shear. Fortunate for those exploring the wild vertical — often in thin brittle cracks of fractured limestone and dolomite that would shatter if hammered with a round spike—the broader availability of sheet steel coincides with this early era of technical rock climbing.



Liebig trading card.

Carl Moos 1912. The Watzmann-Mittelspitze family of peaks, one of the regions where pitoncraft evolved as more efficient tools for ascent.

"In 1911 A. Fendrich s climbing manual *Der Alpinist* appeared In it a climber is shown banging a piton into the rock (''that small inseparable comrade of the rope') and he is doing it with a stone!

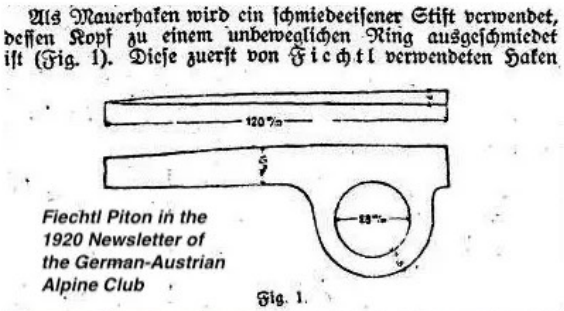
The Alps and Alpinism

Courtesy Bill Andrews

Top: 'The ghost of Hermann von Barth looks on in contempt at wall hooks and rope, the aids of modern climbing technology.' Above: 'There sits the indignant baboon. My dear gentleman. That's unfair competition!' Ring pitons illustrated, from Der Alpinismus im Bildern, 1911.

Climbing Pitons Early Evolution-part 1e-- Fiechtlhaken Design.

Hans Fiechtl is credited with the first thin piton design with a larger offset-eye, the core design element of the modern piton. The eye—if nailed to the hilt—provides extra support in vertical cracks, and the offset design reduces ovaling of the round eye when getting pounded, thanks to continuous material through the centerline.


Als Mauerhaken wird ein ſchmiedeeiſener Stift verwendet, deſſen Kopf zu einem unbeweglichen Ring ausgeſchmiedet iſt (Fig. 1). Dieſe zuerſt von Fiechtl verwendeten Haken
Fig. 1.

Fiechtl Piton in the 1920 Newsletter of the German-Austrian Alpine Club

Early Fiechtl design pitons, ~1920

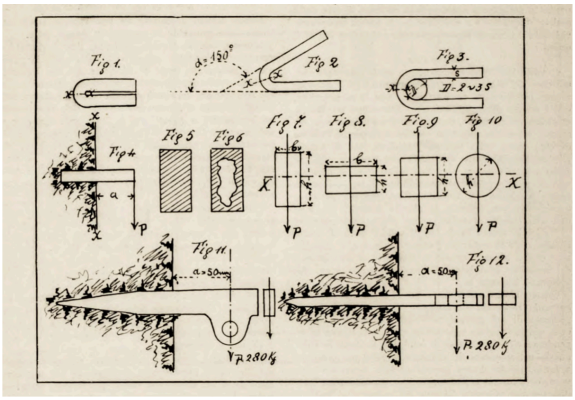


IMAGE: 1926 Italian article on the art of Fiechtlhaken design. Italian climbers and designers took piton development to the next level in the 1930's. Figures 1-3 illustrate a material test advised to verify the proper steel with appropriate hardness, elongation, and strength.

Limestone cracks are hard and brittle, but also can be very undulating, so the proper hardness of the piton—not too soft, but not too hard—enables the piton to weave deep into tricky placements without shattering the rock. Fiechtl and his blacksmith figured out the optimal hardness for a good limestone piton, and shared the new design widely[13].

Reading the German-Austrian Alpine Club journals, there was an increase in piton climbs—all considered "artificial aid" ascents—at the turn of the century and booming by 1910/1911, so it's likely that some climbers had access to versatile and lightweight pitons that could be quickly tied off safely earlier than 1910[14]. Oskar Schuster was one of the best all-around rock, ice, and expedition climbers of the era and describes placing pitons (and bolts) "of many sizes" on

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[13] According to journalist and alpinist, Horst Höfler, Fiechtl's early pitons were made in Münster, where he lived at the time, by blacksmith Mühlbacher. Perhaps family: blacksmith Anton Milpacher (now Mühlbacher) was built Anthony Chapel in the neighbouring town of Jenbach in 1719, and today in Münster, one of the larger engineering firms there is called Mühlbacher. The date of the first Fiechtlhaken made by Mühlbacher is unclear, but there is a reference that Fiechtl might have still been using traditional wrought iron Mauerhaken on the Rofanspitze in 1908. Münster is in the valley between the Karwendel and Wilder Kaiser ranges, where technical big wall rock climbing begins (and will be topic of future post and cover the early pioneers). Note also that Fiechtl's name is often misspelled as Fichtl in the literature.

[14] Footnote2: Mitteilungen des Deutschen und Österreichischen Alpenvereins (1875-1938) and Zeitschrift des Deutschen und Österreichischen Alpenvereins (1870-1940).

Typical variations of flat offset-eye pitons made in the early years of Fiechtlhaken.

tricky leads. Tita Piaz, one of the great free climbers of the period, used pitons efficiently and effectively for rock climbing belays and protection, and mastered the use of a specialised piton hammer for faster and safer rock climbs up the steepest terrain.[15]

The greater availability of stronger hardenable steels required blacksmiths to broaden their skills, as industrial mass production reduced demand for locally smithed metalware. Heat treating metal at the time was an evolving science, and new tools required varied hardnesses now possible with various new steels. It is not so much as the prior wrought iron material used for pitons was weak, but that wrought iron is not hard—and not able to be hardened by heat treatment—there is not enough carbon in wrought iron to create a harder steel for effective bashing into cracks. Perhaps it's better to say, "steel heat treatment is an art" (heating/quenching/tempering) during this period in order to optimize hardness and elongation for a specific application. And new thin steel pitons were needed to protect the bold new climbs being accomplished in this era. Awareness of better protection systems increased as pitoncraft knowledge was shared more widely. The 1920 Mittielungen article "Das Versichern beim Klettern" (Security for Climbing) is an overview of a basic protection system using rope, piton, carabiners and rope slings, and is the first published reference to Fiechtl's original piton design. The article was written in response to a "sad accident" witnessed by the author when the second was killed after the leader fell, taking both to the air, and

Note the early branding on this one.
Source: Historisches Alpenarchiv

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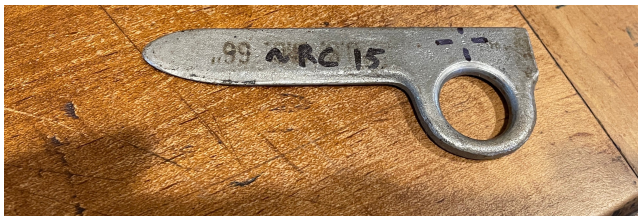
[15] In the famous Mauerhakenstreit debates of 1911-12, Georg Leuchs commented on how Piaz was willing to use up to 30 pitons for an ascent, as reported by Hans Dülfer; more will be explained in the chapter on Tita Piaz's amazing climbing career.

mentions that those “who find pleasure in danger” is fine, but only if going solo, and optimising security—especially a belay— for a team is justified for those who care about life[16]. In the pre-WWI period, there were some who had developed good protection technique with pitons, and many who did not either out of principle or lack of access to the new tools, but the teams that adopted the new protection devices put up some incredible big walls.

The original Fiechtl design has stood the test of time, and was a primary piton design well into the 1960’s and even today with some specialty pitons from other metals (titanium versions can be bought today).

The "double-fall" by Ernst Platz -oil on canvas around 1880.



Mild Steel Army Piton, 1950/60’s, about RC15/20. Similar-to the mild steels likely used for early Fiechtlhaken (similar to St37 or AISI 1020/1025)

Hans Dülfer 1912
Haken vom Cima delle Pòpe – Rosengarten
(used with permission by Reinhold Messner)
1912
Hans Dülfer
Cima delle Pòpe – Rosengarten
Cima delle Pòpe – Catinaccio

Hans Dülfer pitons in the Messner Museum. Note the lack of extended hitting surface on bottom, perhaps made of a softer material or forged with a different process. Courtesy Messner Museum.

[16] The author of the 1920 article describes a “wrought iron (sic) pin used as a wall hook, whose head is forged into a fixed ring, and combine all the advantages of strength, suppleness, and equity”; but often, even by climbers and authors into the 1930’s, steel is mistakenly referred to as iron. Wrought iron has a hardness ~100 Brinell, I recently tested a mild steel Army piton (photo) around RC15, ~200 Brinnell, and early mild steels at the time would have been similar hardness. Modern 4130 chromemoly knifeblades are RC41/42, equivalent to Brinell ~375. The best early Fiechtlhaken were crafted from flat plate steel stock of the appropriate thickness, simplifying manufacture for eye and taper.

Perhaps the finest Fiechtlhaken ever made—by Bugatti designers crafted for alpinist and King of Belguim, circa 1930. Società degli Alpinisti Tridentini

Note that even in 1921, a reference to a "***Stahlhaken mit Seilring***" (steel piton with rope ring) indicates that a rope sling (1m length of 5-7mm cord) was still a standard connection system, as only a few carabiners were carried by most climbers at the time—primarily saved for rope manoeuvres—steel carabiners were still rare and probably quite expensive[17]. Designers stressed the importance of rounding the inside of the piton's eye so as not to leave a sharp edge that could cut the rope ring (1926).

Horizontal Fiechtlhaken

Necessity breeds invention, and sometime before 1922, horizontal pitons also appear, with the blade at right angles to the eye (the design generally known as "Lost Arrows" in Yosemite). Flat Fiechtlhaken are good in vertical cracks, but poorly loaded in horizontal cracks. Horizontal Fiechtlhaken are more versatile as they work for both vertical and horizontal cracks, as the added torque on the blade when loaded in vertical cracks is often beneficial to its holding power. Early pitons were custom made by various blacksmiths, and there are reports of bad ones with the smiths outed in journals (on the Durreck, 1910: "The first wall hook—from the blacksmith in Sand—bends. Only the second 'real' one holds").

Larger cracks were sometimes protected with wood wedges until the invention of angle pitons with new materials and manufacturing techniques in the 1940's. It should be remembered that the best climbers of the early 20th century were exceptional lieback, off-width and chimney maestros and maestras, even by today's standards (practice for these techniques are rarely found in today's climbing gyms), and boldly "ran it out" on larger cracks and desperate chimneys, at a time when anything longer than a 3m fall on the ropes of the day was a dice roll. Pitons were generally carried in coat pockets, and tales and tips were shared on awkward tricky

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[17] Also to remember that from from 1914-1922, the region was beset by war (1914-1918), flu pandemic (1918-1920), and hyper-inflation (1921-1922) in succession, so it's amazing there was any development and production of "high tourist" needs during this period, let alone the incredible innovation in rock climbing tools and techniques.

Making a Horizontal ("Lost Arrow" in 1950s parlance) starting with 3/16" x 3/4" steel stock.

placements runout on lead, placing a good anchor with one hand deftly .
Flat pitons with welded rings were also produced in various sizes in the 1920's and beyond, but considered less versatile—less safe in horizontal cracks due to awkward loading of the ring—and were best employed as rappel anchors. Long serrated Fiechtlhaken were also used as ice pitons.
Flat and horizontal pitons with the offset eye were the two main designs for the next several decades, and both designs have ever since been referred to as Fiechtlhaken, with many variations of the blade. Sometime in the 1920's ASMÜ Schuster began mass producing (footnote) flat and horizontal pitons with blacksmiths in Bad Oberdorf (Allgäu mountains), and the ASMÜ pitons were shipped worldwide, finding their way into mountain ranges all over the world.
footnote: Hermann Huber clarifies: "*After having seen the workshops of their makers in Bad Oberdorf, I can only say it was not a real industrial mass production, but they must have been quite busy in following the market demand. The ASMÜ pitons were more or less monopolic in Germany for a while.*"

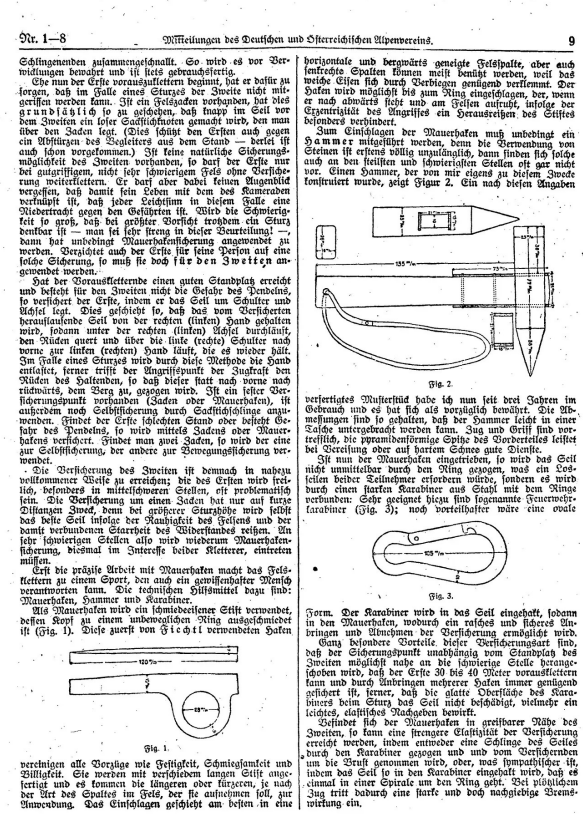
SIDEBAR—FORGING PITONS by Mitchell Goldman, full time blacksmith writes:
If the first steel Fiechtl pitons were cut from flat bar-stock steel and then finished by hand, which seems likely, it would be very easy for even a modestly skilled blacksmith to "set down" the steel in such a way as to make it suitable for a horizontal placement. You would hold the blade of the piton over the face of the anvil with the eye of the piton pushed against the side of the anvil face and with repeated blows, set down the material with the hammer, moving the profile of the steel to be less tall and more wide.
As for making 1" holes for the eye in sheet steel, a stud punch or slot punch is used, then the eye is drifted to the desired shape and size using one (or a series of progressively larger) tapered tools called a Drift. By punching and using drifts, "stretch" the hole to desired size. If one wanted the hole to swell below the centerline of the stock, like the eye of a piton, maintaining a straight top line, you would just make the hole offset toward the side of the stock meant to be the bottom of the piton.

The images below help tell the early piton story:

Y_ROUTE in Northface of Sekarlspitze, FA: H.Fiechtl/E.Schmid, 1923
Piton from Hermann Huber Collection (found in 1964 on route)

“a piton by Hans (Johann) Fiechtl around 1920, which is in the MMM Corones.”
Foto: Archiv Reinhold Messner, Messner Mountain Museum

Early horizontals, with eye and blade the same thickness. This design soon evolved to a wider blade horizontal piton.



Nr. 1—8 Mitteilungen des Deutschen und Österreichischen Alpenvereins. 9

Schlingenenden zusammengeschnallt. So wird es vor Verwittungen bewahrt und ist stets gebrauchsfertig.

Ehe nun der Erste vorauszuklettern beginnt, hat er dafür zu sorgen, daß im Falle eines Sturzes der Zweite nicht mitgerissen werden kann. Ist ein Felszacken vorhanden, hat dies grundsätzlich so zu geschehen, daß knapp im Seil vor dem Zweiten ein loser Sackstichknoten gemacht wird, den man über den Zacken legt. (Dies schützt den Ersten auch gegen ein Abstürzen des Begleiters aus dem Stand — derlei ist auch schon vorgekommen.) Ist keine natürliche Sicherungsmöglichkeit des Zweiten vorhanden, so darf der Erste nur bei ausgiebigem, nicht sehr schwierigem Fels ohne Versicherung weiterklettern. Er darf aber dabei keinen Augenblick vergessen, daß damit sein Leben mit dem des Kameraden verknüpft ist, daß jeder Leichtsinn in diesem Falle eine Niedertracht gegen den Geführten ist. Wird die Schwierigkeit so groß, daß bei größter Vorsicht trotzdem ein Sturz denkbar ist — man sei sehr streng in dieser Beurteilung! —, dann hat unbedingt Mauerhakensicherung angewendet zu werden. Verzichtet auch der Erste für seine Person auf eine solche Sicherung, so muß sie doch für den Zweiten angewendet werden.

Hat der Vorauskletternde einen guten Standplatz erreicht und besteht für den Zweiten nicht die Gefahr des Pendelns, so versichert der Erste, indem er das Seil um Schulter und Achsel legt. Dies geschieht so, daß das vom Verbleibenden herauslaufende Seil von der rechten (linken) Hand gehalten wird, sodann unter der rechten (linken) Achsel durchläuft, den Rücken quert und über die linke (rechte) Schulter nach vorne zur linken (rechten) Hand läuft, die es wieder hält. Im Falle eines Sturzes wird durch diese Methode die Hand entlastet, ferner trifft der Angriffspunkt der Zugkraft den Rücken des Haltenden, so daß dieser stark nach vorne und rückwärts, dem Berg zu, gezogen wird. Ist ein fester Versicherungspunkt vorhanden (Zacken oder Mauerhaken), ist außerdem noch Selbstsicherung durch Sackstichschlinge anzuwenden. Findet der Erste schlechten Stand oder besteht Gefahr des Pendelns, so wird mittels Zackens oder Mauerhakens versichert. Findet man zwei Zacken, so wird der eine zur Selbstsicherung, der andere zur Bewegungssicherung verwendet.

Die Versicherung des Zweiten ist demnach in nahezu vollkommener Weise zu erreichen; die des Ersten wird freilich, besonders in mittelschweren Stellen, oft problematisch sein. Die Versicherung um einen Zacken hat nur auf kurze Distanzen Zweck, denn bei größerer Sturzhöhe wird selbst das beste Seil infolge der Rauhigkeit des Felsens und der damit verbundenen Starrheit des Widerstandes reißen. In sehr schwierigen Stellen also wird wiederum Mauerhakensicherung, diesmal im Interesse beider Kletterer, eintreten müssen.

Erst die präzise Arbeit mit Mauerhaken macht das Felsklettern zu einem Sport, den auch ein gewissenhafter Mensch verantworten kann. Die technischen Hilfsmittel dazu sind: Mauerhaken, Hammer und Karabiner.

Als Mauerhaken wird ein schmiedeeiserner Stift verwendet, dessen Kopf zu einem undurchgehenden Ring ausgeschmiedet ist (Fig. 1). Diese zuerst von Fiechtl verwendeten Haken

Fig. 1.

vereinigen alle Vorzüge wie Festigkeit, Schmiegsamkeit und Billigkeit. Sie werden mit verschiedem langen Stifte angefertigt und es kommen die längeren oder kürzeren, je nach der Art des Spaltes im Fels, der sie aufnehmen soll, zur Anwendung. Das Einschlagen geschieht am besten in eine horizontale und bergwärts geneigte Felsspalte, aber auch senkrechte Spalten können meist benützt werden, weil das weiche Eisen sich durch Verbiegen genügend verklemmt. Der Haken wird möglichst bis zum Ring eingeschlagen, der, wenn er nach abwärts steht und am Felsen aufruht, infolge der Exzentrizität des Angriffes ein Herausreißen des Stiftes besonders verhindert.

Zum Einschlagen der Mauerhaken muß unbedingt ein Hammer mitgeführt werden, denn die Verwendung von Steinen ist erstens völlig unzulänglich, dann finden sich solche auch an den steilsten und schwierigsten Stellen oft gar nicht vor. Einen Hammer, der von mir eigens zu diesem Zwecke konstruiert wurde, zeigt Figur 2. Ein nach diesen Angaben

Fig. 2.

verfertigtes Musterstück habe ich nun seit drei Jahren im Gebrauch und es hat sich als vorzüglich bewährt. Die Abmessungen sind so gehalten, daß der Hammer leicht in einer Tasche untergebracht werden kann. Zug und Griff sind vortrefflich, die pyramidenförmige Spitze des Vorderteiles leistet bei Bereitung oder auf hartem Schnee gute Dienste.

Ist nun der Mauerhaken eingetrieben, so wird das Seil nicht unmittelbar durch den Ring gezogen, was ein Lossein beider Teilnehmer erfordern würde, sondern es wird durch einen starken Karabiner aus Stahl mit dem Ringe verbunden: Sehr geeignet hiezu sind sogenannte Feuerwehrkarabiner (Fig. 3); noch vorteilhafter wäre eine ovale

Fig. 3.

Form. Der Karabiner wird in das Seil eingehakt, sodann in den Mauerhaken, wodurch ein rasches und sicheres Anbringen und Abnehmen der Versicherung ermöglicht wird.

Ganz besondere Vorteile dieser Versicherungsart sind, daß der Sicherungspunkt unabhängig vom Standplatz des Zweiten möglichst nahe an die schwierige Stelle herangeschoben wird, daß der Erste 30 bis 40 Meter vorausklettern kann und durch Anbringen mehrerer Haken immer genügend gesichert ist, ferner, daß die glatte Oberfläche des Karabiners beim Sturz das Seil nicht beschädigt, vielmehr ein leichtes, elastisches Nachgeben bewirkt.

Befindet sich der Mauerhaken in greifbarer Nähe des Zweiten, so kann eine strengere Elastizität der Versicherung erreicht werden, indem entweder eine Schlinge des Seiles durch den Karabiner gezogen und und vom Versichernden um die Brust genommen wird, oder, was sympathischer ist, indem das Seil so in den Karabiner eingehakt wird, daß es einmal in einer Spirale um den Ring geht. Bei plötzlichem Zug tritt dadurch eine starke und doch nachgiebige Bremswirkung ein.

Sektion BAYERLAND 1922

Karabiner.

Ältere Form.

(„Feuerwehrkarabiner").

Achten, daß das Seil im weiten Teil läuft, da es sich sonst in der Kröpfung klemmen könnte.

Bessere neue Form.

10—12 cm lang.

Eisenringe als Abseil-Ring zweckmäßiger Art haben etwa 60 mm äußeren Durchmesser und 9 mm Stärke und sind aus Schmiedeeisen und gut geschweißt in Eisenwarengeschäften als „Strangringe" für Fuhrwerke erhältlich.

Mauerhaken.

Gewöhnliche Länge 12—15 cm. Das Eisen soll zäh und biegsam, nicht aber spröde sein.

Fiechtlhaken werden in verschiedenen Längen angefertigt und verdienen den Vorzug.

Ringhaken.
Ältere Form.

Man achte auf gute Schweißung des Ringes.

Fiechtlhaken.
Bessere Formen; schmale für Längs-,

breite für Quer-Risse.

Eintreiben.

Schlecht
Gut
Besser

Kletterhämmer, Modelle Sixt.

Spitze für Eisbearbeitung u. dergl. sowie zum Herausziehen von Mauerhaken.

Angenehmer in der Tasche zu tragen; doch nur Partien zu empfehlen, von denen auch die andere Form mitgeführt wird.

Stiel nicht zu kurz; Gewicht nicht zu leicht.

7

Left: 1920 Mitteilungen des Deutschen und Österreichischen Alpenvereins. Right: 1922 Bayerland section publication courtesy Hermann Huber. Hermann notes above: "Breite (Haken) für Quer-risse" (wide hook for horizontal cracks) differs from common naming QuerFiechtl, as known since 1940s to today, but means the same."

Mauerhaken. Nun kommt ein Stück der Ausrüstung, mit dessen Namen viel Unfug und Großsprecherei getrieben wird, nämlich Mauerhaken. Das sind gediegene eiserne Stifte, welche an Örtlichkeiten, wo sich natürliche Griffe, Abseilzacken und insbesondere natürliche Sicherungsmöglichkeiten nicht mehr einstellen wollen, an deren Stelle zu treten haben. Ich rate dir, nicht etwa eine Auswahl ausgedienter Gardinenhaken bei dir zu tragen, sondern handgeschmiedete, dreikantige, mit starkem,

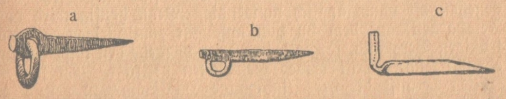
50

Nieberl, Das Klettern im Fels, 1922

geschweißten Ring versehene Stifte (Abb. a). Ausgezeichnet bewährt haben sich die sog. Fiechtlhaken, aus einem Stück geschmiedet (Abb. b). Die Spitze der Haken härten zu lassen, hat keinen Zweck, noch weniger dürfen reine Stahlstifte zur Verwendung kommen. Sie sind viel zu spröde und brechen beim Eintreiben nur allzu leicht ab. Der Haken soll sich gut in die Ritze schmiegen, in die er geschlagen wird, denn Löcher damit in den glatten Fels zu bohren ist nicht der Zweck seines Daseins. — Für einfache Fälle genügen auch die Mizzi Langerhaken (Abb. c) aus gestanztem und gefaltetem Stahlblech.

Der beste Herstellungsstoff für Mauerhaken ist das wunderbar leichte und zähe Duralumin. Die Beschaffung dürfte allerdings zur Zeit nicht ganz einfach sein.

Hammer. Du meinst vielleicht, zu einem derartigen Felsennagel gehöre auch ein Hammer. Tatsächlich führen auch manche Alpinisten einen solchen mit sich. Ich glaube aber, daß dies so selten ein wirkliches Bedürfnis werden wird, daß du füglich



Ringhaken Fiechtlhaken sog. Mizzi Langerhaken

von der Mitnahme dieses Werkzeuges absehen kannst; ich habe noch immer einen Stein gefunden, der mir den Hammer ersetzte. Wo es sich allerdings um Unternehmungen handelt, wie sie beispielsweise die Westwand des Totenkirchls darstellt, ist zweifellos ein Hammer am Platze.

Fast möchte es scheinen, als ob man in nächster Zeit noch zu einem Steinmetz in die Lehre gehen müßte, um in allen Sätteln der „Kletter"-kunst gerecht zu sein. Es wurde nämlich allen Ernstes schon erwogen (und jedenfalls auch schon in die Tat umgesetzt), mit Steinbohrer auszurücken. Derartig geschmackvolles Beginnen überlasse ich deiner eigenen Beurteilung.

Karabiner. Ein neuzeitliches, sehr wichtiges Hilfsmittel bei schweren Klettereien sind die Karabiner, aus bestem, schmied-

Karabiner

4*

51

***Historisches Alpenarchiv* A piton connoisseur examines the junction between the eye and main blade on horizontals very carefully for structural characteristics.**

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in gediegener Ausführung sowie alle Alpina-Spezialartikel kaufen Sie im
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1927 ad—all the cool gear shops had the latest Fiechtlhaken. Note the various spellings.

SPORTHAUS JUNGBORN
DRESDEN, HAUPTSTR. 34
Kletterhammer . . . . . 2.—
Mauerhaken, hoch oder quer —.30
Abseilringe . . . . . —.35
Seilkarabiner . . . . . —.75
Eishaken mit Zähnen . . —.80

1928 Sporthaus Jungborn Catalog

ASMü Fiechtlhaken

PICCOLE CONSIDERAZIONI TECNICHE SUL CHIODO DA ROCCIA, CORDA, PICCOZZA

Assistendo alle lezioni di tecnica alpina che il signor Rag. Martinenti ha impartito ai giovani della Sezione di Milano (non perchè io sia ancor giovane, ciel lo vo-lesse, ma perchè a me piace udir ragionare di alpinismo e di cose alpine) mi venne l'idea di considerare gli at-trezzi che il Marimonti trattava dal lato della loro ap-plicazione sportiva, da quello tecnico della resistenza e fabbricazione.

L'argomento non era ancora stato trattato sulla *Rivista* ho creduto quindi ne valesse la pena. Sarò forse un po' prolisso, perchè desidero essere alla portata di tutti; faremo una conversazione alla buona, come si conviene tra amici, senza ostentazioni di scienza, terra terra, come il caso esige; immaginandoci sbattiticamente sdraiati su un bel prato, innanzi al rifugio, mentre il cuoco della compagnia ci prepara il pranzo.

C HIODO DA ROCCIA

Materiale. — Data la natura degli sforzi ai quali esso è generalmente assoggettato (urto, flessione) deve essere resistente e molto elastico. Nella siderurgia mo-derna troviamo armonicamente sviluppate queste qua-lità nei cosi detto *acciaio Martin Siemens* basico che ha un *coefficiente di rottura* (numero di kg. ai quali si deve assoggettare 1 mmq. di materia per vincere la forza di coesione) così determinante la rottura di 32 a 40 per mmq. ed un allungamento del 24-26% (allunga-mento di una barra sottoposta ad uno sforzo di trazione, prima di rompersi, in confronto con la sua lunghezza iniziale) caratteristiche queste dipendenti dalla compo-sizione chimica del metallo considerato.

In commercio questa specialie qualità di acciaio non si trova facilmente perchè viene adoperata, in modo particolare, nella costruzione delle caldaie a vapore.

Si può avere invece il cosidetto *ferro omogeneo dolce*, che è un Martin-Siemens meno buono. Questo mate-riale non è un vero *ferro*, ma un acciaio con piccolissimo tenore di carbonio; carico di rottura 40-50 kg. per mmq., allungamento 15-20 %. In mancanza di meglio bisogna contentarsi. Ad ogni modo questa qualità di materiale è superiore al vecchio e pur buono *ferro me-dio* (vero ferro) con circa 25 kg. per mmq. di carico di rottura e 8-12 % di allungamento.

Ma ecco che uno dei miei ascoltatori si rivolta tutto inquieto e mi dice: Come vuole che io sappia distin-guere un ferro dolce da uno amaro! Io non ne ne intendo; studio filosofia! Paratamente rispondo: Anzitutto sappia che nel gergo metallurgico il contrapposto di ferro dolce è *ferro crudo*; sono capricci del linguaggio ed io non so cosa farci: poi che le caratteristiche principali di questo metallo sono elevato carico di rottura e piccolo allun-gamento; infine non si allarmi, sono qua apposta per tirarla fuori dall'impaccio della scelta.

Premetto che l'avveduto ed ardito accademico, che ha in mente di compiere grandi cose, non deve compe-rare i chiodi da roccia fatti dal commercio, ma se li deve far costruire da un abile ed onesto fabbro, di sua fiducia.

Ammettiamo che abbiate trovato il vostro uomo. Gli farete questo discorso: « A me occorrono dei pezzi di ferro omogeneo dolcissimo, lunghezza mezzo metro, un metro non importa; larghezza 10-20 cm. non importa; spessore 11-13 mm.; preferibilmente desidererei dei ritagli di lamiere che sono servite per la costruzione delle caldaie a vapore; se poi voi mi procurerete qualche barra per grossi chiodi di caldaia vi dimostrerò la mia riconoscenza pagandovi un bel litrone di vino. Vi dirò dopo a che servirà questo materiale; per ora vi basti sapere che dalla bontà di esso dipende la mia vita ».

Non commettetevi mai la minchioneria di dirgli che il ferro richiesto serve per fucinarci dei chiodi da roc-cia; egli assolutamente non ne capirà l'importanza (a meno che il fabbro sia arch'egli un alpinista) crederà si tratti di chiodi per appendervi qualche animale a quattro zampe e quindi la sua ignoranza e coscienza gli faranno considerare la cosa con leggerezza.

Dopo qualche giorno, il vostro uomo, vi farà trovare pronto tutto il materiale. « Ecco qua » vi dirà; « Se gira tutta la città non ne troverà di migliore; può pure pagarmi il litro ».

« Ogni promessa è debito, ma prima voglio provare e vedere di che si tratta », risponderete con severo ci-piglio. Il barbuto fabbro assumerà subito un'aria dalla quale, voi che siete dei buoni psicologi, avrete un'idea esatta dei sentimenti che lo agitano: meraviglia, diffi-denza, incredulità.

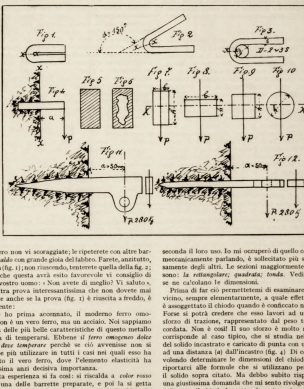
« Si! desidero provare il materia e, — ripetete — e per questo vi prego tagliare da queste strisce quattro o cinque barrette della lunghezza di circa 250 mm., larghezza 20 mm., spessore quello delle strisce. » Se poi il fabbro vi presenterà le famose barre per le quali è in grosso il litrone, ne farete tagliare uno o due pezzi della lunghezza e dimensioni precedenti.

L'indomani le barrette sono pronte e voi che non avete dimenticato l'impegno, afferrarete subito uno dei pezzi tagliati dalle strisce, pregando il fabbro di piega-velo in modo che le due estremità vengano a comba-ciare (fig. 1). Egli resterà un po' perplesso, poi pro-berà la sua brava tenaglia e metterà il pezzo al fuoco, ma interromperete la mossa dicendogli: « Nol Dovete piegarlo a freddo (temperatura ambiente) ». L'operaio non si curerà di nascondervi il pensiero: « Questo giovane è matto ». Voi allora con una certa indiffe-renza e disprezzo gli getterete in faccia queste parole: « Venne di Ambrogio ». Il vostro uomo abbasserà la testa ed eseguirà l'ordine. Se ad operazione finita nella sezione XX (fig. 1) non vi sono manifestate incrinature, mi rincresce per voi, ma dovrete correre alla prossima osteria e pagargli il litrone con relativo supplemento. *Il materiale di quella barra è il migliore che per il vostro scopo potete desiderare.* Se le incrinature avvengono, il fabbro ha perduto la mancia perchè la barra non è fatta del materiale che si esige per i chiodi di caldaie a vapore.

Al mondo però non bisogna mai essere troppo esi-genti e quindi per ovviare ad ogni rischio la prova indi-cata dalla fig. 1 non è detto che quelle barre non sian

di buonissimo materiale; per accertarvene non avrete che a ripetere la prova sempre a *freddo* su un'altra bar-retta; soltanto la piegatura dovrà essere spinta sino a che s'intimano le incrinature. Se l'angolo a (fig. 2) al quale è giunta la barretta è uguale o supera i 150° il materiale è ancora buonissimo. Questo angolo, il fabbro, lo misurerà con la cosidetta *falsa squadra* che non manca mai nei suoi attrezzi.

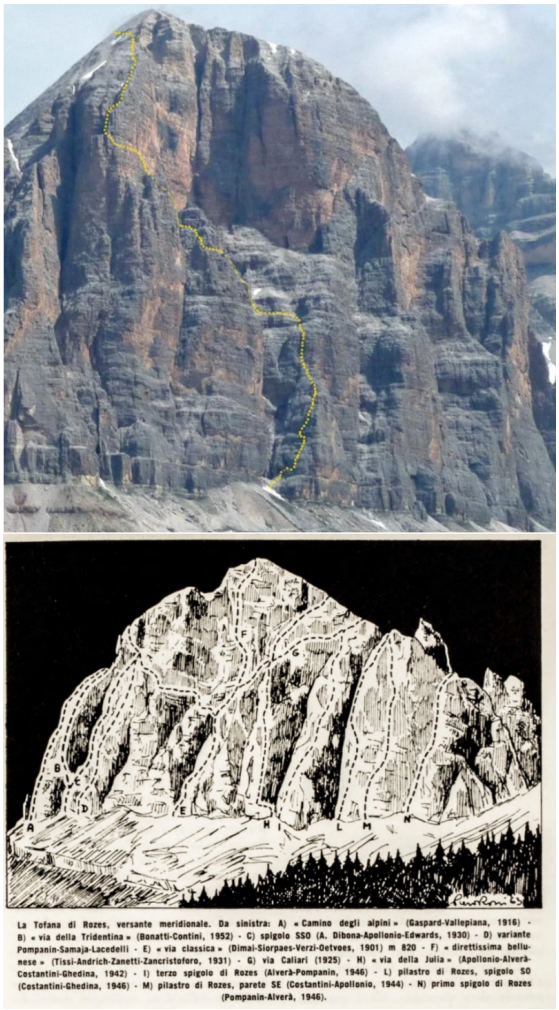
Queste prove a *freddo* le farete anche con un paio delle barrette preparate dalle strisce presentate. Se non



The “Last Great Problems” early 1900’s

Shortly after the ascent by the Tomasson team of the south face of Marmolada in 1901, another adventurous spectacular long free route was completed by the baroness sisters Ilona & Rolanda Eötvös from Budapest, with Antonio Dimai, Giovanni ‘Santo’ Siorpaes, Agostino Verzi—three of the most famous and talented guides at the time. Their route up the 700m south wall of Tofana di Rozes entailed exposed 5.6 free climbing and intricate route finding. Guided belays on such a route involve finding a good stance, bracing oneself, and holding the rope closely for the second to avoid any shock load on the system[18]. After this ascent, the pace on the biggest walls slowed, and the focus of the “last great problems” for the next few years shifted to the slender spires of the Dolomiti.

Typical stance on the 700m Tofana di Rozes, and Damai portrait in Piaz’s book.



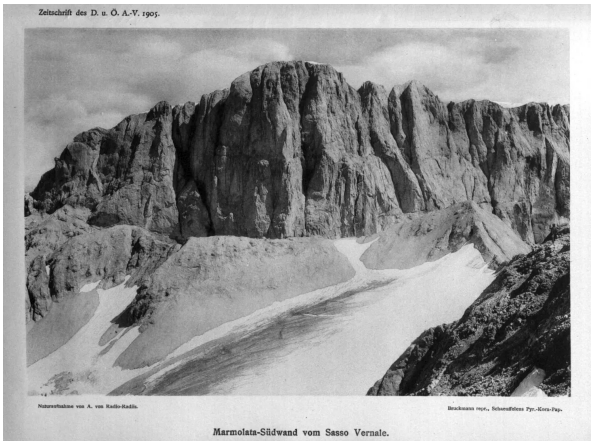
La Tofana di Rozes, versante meridionale. Da sinistra: A) « Camino degli alpini » (Gaspard-Vallepiana, 1916) - B) « via della Tridentina » (Bonatti-Contini, 1952) - C) spigolo SSO (A. Dibona-Apollonio-Edwards, 1930) - D) variante Pompanin-Samaja-Lacedelli - E) « via classica » (Dimai-Siorpaes-Verzi-Oetvoes, 1901) m 820 - F) « direttissima bellunese » (Tissi-Andrich-Zanetti-Zancristoforo, 1931) - G) via Caliari (1925) - H) « via della Julia » (Apollonio-Alverà-Costantini-Ghedina, 1942) - I) terzo spigolo di Rozes (Alverà-Pompanin, 1946) - L) pilastro di Rozes, spigolo SO (Costantini-Ghedina, 1946) - M) pilastro di Rozes, parete SE (Costantini-Apollonio, 1944) - N) primo spigolo di Rozes (Pompanin-Alverà, 1946).

The 1901 “Dimai/Eötvös” on the south wall of Tofana di Rozes in the Ampezzo Valley. (Enrico Maioni photo). Right: routes by 1963 in the Italian Alpine Journal.

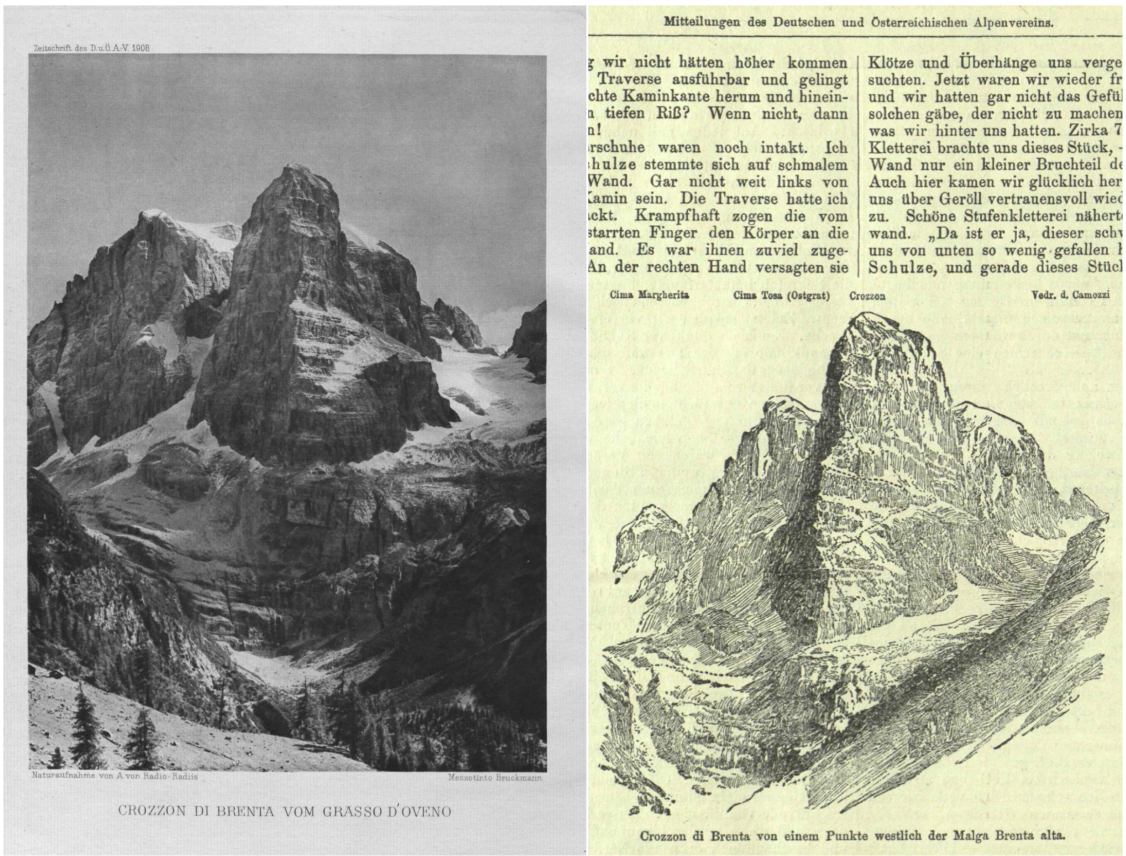
Towers never imagined climbable—accessible solely by birds—were becoming possible in the minds of climbers like Tita Piaz, willing to “go for it” using gymnastic climbing ability in exposed situations. For 50 years since the time of Whymper, as rock got steeper, the eye for a line on steep rock was primarily focused on major chimney features with “windows”—safe places often found in long deep cracks, i.e, a good belay stance—but climbers were discovering the faces of amazingly featured Dolomiti rock were also possible with bold free-climbing

[18] Decades after the first ascent of this wall, in a father-son guiding tradition, Antonio’s son Angelo Dimai of Cortina repeated a difficult “directissima” of Tofana di Rozes with Miss Fitzgerald (ref: Rudatis).

technique—what Guido Rey coined ‘Alpinisme Acrobatique’. Georg Winkler’s ahead-of-its-time ascent of the Winklerriß on the Vajolet Towers in 1887 was gradually opening climber’s eyes to the possibilities. The early 1900’s saw the first ascents of the some of the most spectacular spires in the Dolomites. One spire that best typifies the era is Campanile Basso. Just as in Yosemite starting three decades later on the sister Higher Cathedral Spire, the experience from climbing previously inaccessible towers led to the tools and techniques that enabled the biggest walls of the area to be climbed more elegantly than ever thought possible.



Marmolada saw one of the first “via ferratas” up the west ridge in 1903. By this time, all the major summits of the Dolomites had been mapped, climbed, and named, and climbers began to eye the spires and more challenging objectives with greater interest.


Zeitschrift des D.u.Ö.A.-V. 1908
CROZZON DI BRENTA VOM GRASSO D'OVENO
Mitteilungen des Deutschen und Österreichischen Alpenvereins.
wir nicht hätten höher kommen
Traverse ausführbar und gelingt
chte Kaminkante herum und hinein-
tiefen Riß? Wenn nicht, dann
Klötze und Überhänge uns verge
suchten. Jetzt waren wir wieder fr
und wir hatten gar nicht das Gefü
solchen gäbe, der nicht zu machen
was wir hinter uns hatten. Zirka 7
Kletterei brachte uns dieses Stück,
Wand nur ein kleiner Bruchteil d
Auch hier kamen wir glücklich her
uns über Geröll vertrauensvoll wied
zu. Schöne Stufenkletterei nähert
wand. „Da ist er ja, dieser schw
uns von unten so wenig gefallen
Schulze, und gerade dieses Stück
Cima Margherita
Cima Tosa (Ostgrat)
Crozzon
Vedr. d. Camozzi
Crozzon di Brenta von einem Punkte westlich der Malga Brenta alta.

Beautiful photographic and illustrated mountain portraits in the German-Austrian journals. The 1905 route up the ridge of Crozzon di Brenta was another great climb of the era.

Campanile Basso di Brenta

In the late 1800's, Campanile Basso became one of the Dolomite's mostly-free climbing crucibles. The spire was considered a "last great problem" and coined the "Dent du Géant of the Eastern Alps" by Hans Barth. The Brenta group is a spectacular sub-range of the Southern Limestone Alps in Trentino, an area with its own society of "Italian Spirit" alpinists (SAT) in what was then the far southern Austro-Hungarian Empire. Campanile Basso is hidden from the valleys below, so the sight of this wild 300m tower first appears at close range, where it draws all climber's eyes wistfully—and often fearfully—to its dramatic and lofty summit.

Basso became *the* centerpiece of bold piton-protected climbing in the early 20th century, so it is worth delving deeper into its history.

Basso First Attempt, 1897

A famous 1897 attempt led by Carlo Garbari and two guides involved intricate route-finding and bold free-climbing. The team led many pitches of exposed and difficult rock, as they spiralled up the south, east, and west faces. After 300m of climbing, the team

Campanile Basso (m. 2908), detto anche *Campanile di Massodi* o *Guglia di Brenta*. È separato dalla cima precedente dalla *Bocchetta della Guglia* o *Bocchetto dei Massodi*, che unisce *Val di Brenta Alta* coi *Massodi*. Carlo Garbari (che primo salì questa cima il 12 Agosto 1897), lo giudica « la cima più caratteristica del Gruppo » (C. Garbari, *Un' ascensione al Campanile Basso* in *XX Annuario*, p. 203-210). Il Garbari lo salì colla guida Antonio Tavernaro di Primiero e Nino Povoli di Covelo. Fra salita e discesa occorsero 10 ore di lavoro.

Report on Garbari's attempt of Campanile Basso in 1897. Confusingly we see two spellings for Nino even in early literature: Povoli and Pooli. The Pooli spelling appears to begin with Rudatis history essays in 1930.

Campanile Basso/Guglia di Brenta (Adalbert Holzer 1920)

was stopped by blank 20m headwall just short of the summit. At a small ledge later coined the Garbari Pulpit, one of the guides, Nino Povoli, boldly free climbed up the blank wall, but was unable to commit to the final difficult and unprotected moves to easier ground[19].

Team rope management had been evolving, especially in the Eastern Alps, from the alpine method where multiple people ascend together connected by rope and all

[19] Guiding big rock routes by this time had evolved into a distinct profession, where guides often scoped and made forays onto unclimbed territory, then advertised the "first ascent" of technical climbs to paying clients. Generally a "carrier" was also hired for adventures (Nino Povoli was actually a carrier in the Basso adventure, and Tita Piaz was a carrier for many years before he became a legal guide in 1907). Some clients also determined the objective, as was probably the case with Garbari on Basso, as one of his main objectives was to claim the summit for the Italians. The guide's primary job was to keep the client alive with good rope-work. For most jobs, one guide was enough, but for the complex traversing vertical rock, two guides were required. The top mountain guides were, and still deservedly are, heroic local figures.

poised to support any slip of the team, to a single climber system with one climber leading, another person—the “second”—braced on the cliff, holding the rope close in hand, perhaps wrapped around the arm for added friction. On Campanile Basso in 1897, without solid anchors on the small ledge, a 10m fall on the static manila ropes of the day would generate huge forces (today we say a factor 2 fall). If the force did not snap the rope over an edge, which it probably would, the pull would be near-impossible to brace against.

In other words, without an anchor on the small rocky ledge, if Nino fell and bounced, which was likely, the tied-together trio would all fall and plummet to certain death. In his book, “Half a Century of Alpinism”, Piaz recounts a hilarious story of how, all huddled

UN' ASCENSIONE AL CAMPANILE BASSO

di C. GARBARI

Senza alcun dubbio il moderno alpinismo militante è entrato in una nuova fase, l'alpinista ora non va più sulle Alpi per ritemprare la fibra agli ideali della montagna, esso se la indebolisce sempre più colle forti emozioni di momenti passati in continua trepidazione per la propria esistenza, sia che egli tenti la sorte camminando in un canalone per un' intera giornata colla continua minaccia che gli cali sul capo una valanga, o gli si smuova un sasso, suo unico appiglio su una parete strapiombante. È questo un indirizzo sano dell'alpinismo al quale una volta si collegavano tanti ideali? certo no, eppure mi tocca smentirmi da me stesso, perchè tal volta mi ci lascio trascinare.

Da che conosco il Gruppo di Brenta esso suscitò su di me assai maggior fascino che qualunque altro gruppo di montagne del nostro bel Trentino; le sue ardite guglie, i suoi

Garbari's 1897 attempt described in the Società degli Alpinisti Tridentini journal.

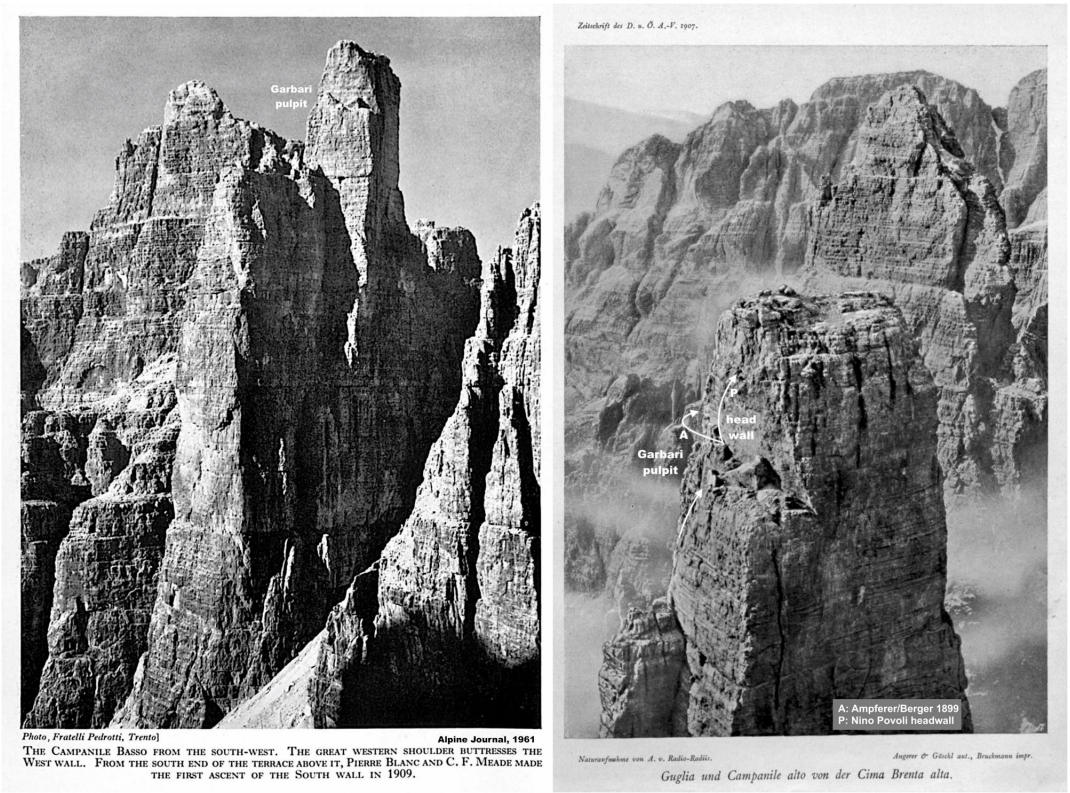
GRUPPO CENTRALE DI BRENTA
dalla Cima Tosa

amidst the ledge rubble, Garbari threatened his unwilling guides with a gun to force the rope to summit by any means. The action if true, “saved Garbari forever from being bothered by unemployed guides,” Piaz wryly notes. But to no avail—it was not yet the time, and the team retreated.

Two years later in 1899, Austrians Otto Ampferer and Karl Berger followed Garbari's route to the ledge, and were also stumped by the obvious direct route up the headwall. Instead, they fearlessly made a blind airy traverse around the exposed NW corner, finding a weakness in the centre of the imposing north wall and onto the celebrated summit, “a spacious plateau with a block altar in the middle.” The summit of Guglia di Brenta (the Austrians' preferred denomination) was won, and the ascent became big news across the whole European climbing community. In the 1899 German-Austrian newsletter, the Austrian team reported the route, noting the use of pitons for the descent.

Added Pitons

Subsequent ascents added many pitons to the route. Hans Barth in the 1907 DuÖAV writes, “As smooth as a snake, the wild rock tower rises an estimated 300m. It is the nice thing that modern mountaineers have enough respect for these wild rock monsters


Garbari
pulpit
Photo, Fratelli Pedrotti, Trento]
Alpine Journal, 1961
THE CAMPANILE BASSO FROM THE SOUTH-WEST. THE GREAT WESTERN SHOULDER BUTTRESSES THE WEST WALL. FROM THE SOUTH END OF THE TERRACE ABOVE IT, PIERRE BLANC AND C. F. MEADE MADE THE FIRST ASCENT OF THE SOUTH WALL IN 1909.
Zeitschrift des D. u. Ö. A.-V. 1907.
head
wall
A
Garbari
pulpit
A: Ampferer/Berger 1899
P: Nino Povoli headwall
Naturaufnahme von A. v. Radio-Radiis.
Augerer & Göschl aut., Bruckmann impr.
Guglia und Campanile alto von der Cima Brenta alta.

Campanile Basso. Garbari's team in 1897 tried and failed to climb direct up the headwall from the Garbali pulpit ("Garbarikanzel"). In 1899 Ampferer and Berger made an exposed airy traverse to the north side and found a technically easier way to the summit.

that they do not kill it completely with wire rope, stairs and railings, (and only) marking its vulnerable places with iron pin and rope ring." He notes the second ascent, two climbers from München, had marked a number of these "vulnerable places" with pitons. A fixed rope was also noted in place for one of the sections. On Barth's third ascent in 1901 with Alfred von Radio-Radiis (what a name!), he describes bringing sharp steel pitons for the ascent, and looking up from the base to a "yellow-red overhang adorned with rope rings" (slings and pitons). Later, unsure of where the route continued, he sees "A hook! So it has to go that way".

At a tiny ledge, he notes, "Our predecessors once again had their weapons in the body of this wild mountain, and we thanked them for this backup option." There's more: on a section mid-way, where the route exits a chimney and moves out onto an exposed face, "The first climbers again tamed the stubborn rock with a hook, so one calms down about climbing the pillar." For the final bold climbing around the NW corner to the final wall, he writes, "an alcove with rusty hooks in it, above it a brittle outcrop with a hammered piton[20] with a weathered hemp rope ring still seems to hold," followed by a description of the committing moves above.

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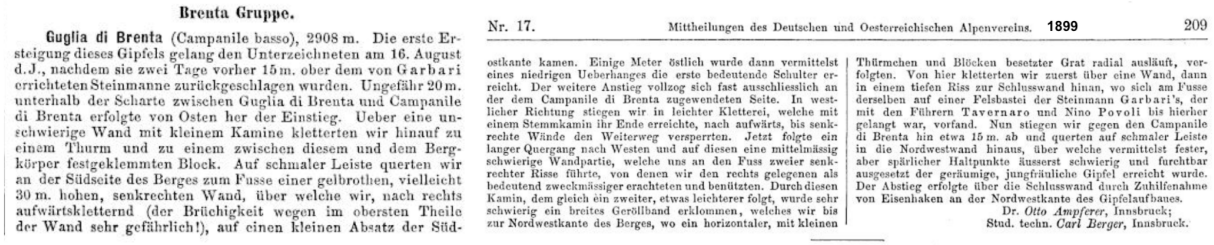
[20] The German word Barth uses here is "Stift" (pin/pen/pencil/peg), probably similar to the the British use of the word, "peg", a generic term used for all things hammered in.



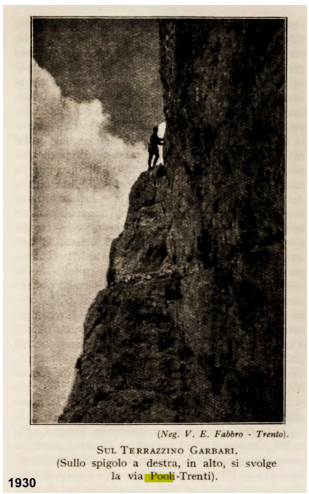
Brenta Gruppe.

Guglia di Brenta (Campanile basso), 2908 m. Die erste Ersteigung dieses Gipfels gelang den Unterzeichneten am 16. August d. J., nachdem sie zwei Tage vorher 15 m. ober dem von Garbari errichteten Steinmanne zurückgeschlagen wurden. Ungefähr 20 m. unterhalb der Scharte zwischen Guglia di Brenta und Campanile di Brenta erfolgte von Osten her der Einstieg. Ueber eine unschwierige Wand mit kleinem Kamine kletterten wir hinauf zu einem Thurm und zu einem zwischen diesem und dem Bergkörper festgeklemmten Block. Auf schmaler Leiste querten wir an der Südseite des Berges zum Fusse einer gelbrothen, vielleicht 30 m. hohen, senkrechten Wand, über welche wir, nach rechts aufwärtskletternd (der Brüchigkeit wegen im obersten Theile der Wand sehr gefährlich!), auf einen kleinen Absatz der Südostkante kamen. Einige Meter östlich wurde dann vermittelst eines niedrigen Ueberhanges die erste bedeutende Schulter erreicht. Der weitere Anstieg vollzog sich fast ausschliesslich an der dem Campanile di Brenta zugewendeten Seite. In westlicher Richtung stiegen wir in leichter Kletterei, welche mit einem Stemmkamin ihr Ende erreichte, nach aufwärts, bis senkrechte Wände den Weiterweg versperrten. Jetzt folgte ein langer Quergang nach Westen und auf diesen eine mittelmässig schwierige Wandpartie, welche uns an den Fuss zweier senkrechter Risse führte, von denen wir den rechts gelegenen als bedeutend zweckmässiger erachteten und benützten. Durch diesen Kamin, dem gleich ein zweiter, etwas leichterer folgt, wurde sehr schwierig ein breites Geröllband erklommen, welches wir bis zur Nordwestkante des Berges, wo ein horizontaler, mit kleinen Thürmchen und Blöcken besetzter Grat radial ausläuft, verfolgten. Von hier kletterten wir zuerst über eine Wand, dann in einem tiefen Riss zur Schlusswand hinan, wo sich am Fusse derselben auf einer Felsbastei der Steinmann Garbari's, der mit den Führern Tavernaro und Nino Povoli bis hierher gelangt war, vorfand. Nun stiegen wir gegen den Campanile di Brenta hin etwa 15 m. ab und querten auf schmaler Leiste in die Nordwestwand hinaus, über welche vermittelst fester, aber spärlicher Haltpunkte äusserst schwierig und furchtbar ausgesetzt der geräumige, jungfräuliche Gipfel erreicht wurde. Der Abstieg erfolgte über die Schlusswand durch Zuhilfenahme von Eisenhaken an der Nordwestkante des Gipfelaufbaues.

Dr. *Otto Ampferer*, Innsbruck;
Stud. techn. *Carl Berger*, Innsbruck.

Report of the first ascent by Otto Ampferer and Carl Berger from Innsbruck in 1899. Note also the reference to the 'Garbari Stoneman' (the German word 'Steinmann' also refers to stacked marker stones, I.e., a cairn). Note: the naming of Campanile Basso di Brenta vs. Guglia di Brenta. Basso is "low" (in this sense "the lower Brenta bell tower"— lower than the summit of nearby Campanile Alto, "the higher Brenta bell tower"). Guglia is simply "spire" in Italian, hence, Brenta Spire. The naming became a nationalistic debate within the mountain world for a while.

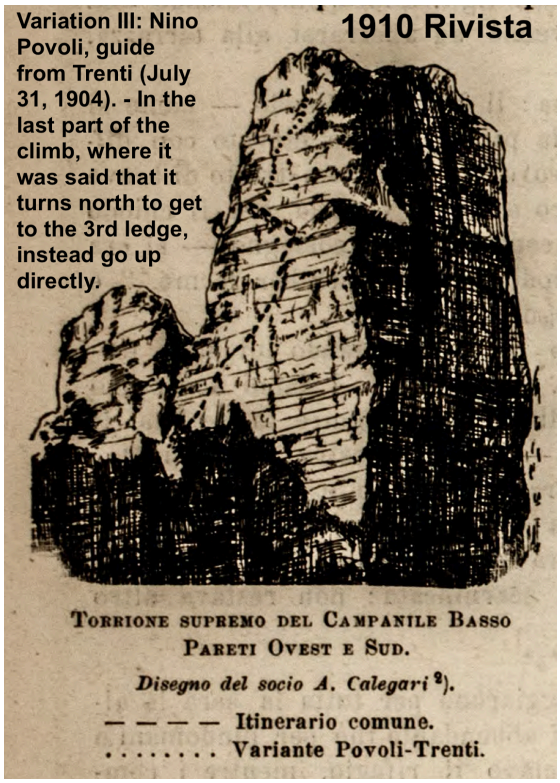
In short, by the third ascent of Campanile Basso, the route had a good number of added pitons, and safer belays. With increasing safety at precarious and exposed belays using artificial anchors (pitons) tied off with cord, short lead falls and swings onto the anchors could be risked. In 1904, Povoli later returned and climbed the direct headwall that he had failed on in 1897, presumably with a safer belay. As the route became more popular, Campanile Basso opened many eyes to the wider possibilities in the vertical world, expanding the imagination of climbers willing to adopt the new tools.[21]



(*Neg. V. E. Fabbro - Trento*).

Sul Terrazzino Garbari.
(Sullo spigolo a destra, in alto, si svolge la via Povoli-Trenti).

1930



1910 Rivista

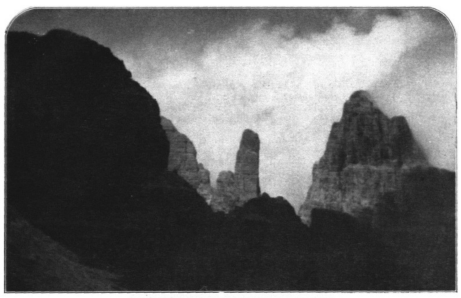
Variation III: Nino Povoli, guide from Trenti (July 31, 1904). - In the last part of the climb, where it was said that it turns north to get to the 3rd ledge, instead go up directly.

Torrione supremo del Campanile Basso
Pareti Ovest e Sud.
Disegno del socio A. Calegari [2]).
— — — — Itinerario comune.
. . . . . Variante Povoli-Trenti.

[21] along with many drawn-out controversies debating piton use vs. abuse. Even with the many pitons, Campanile Basso remained a dangerous and bold route: In 1911, a fatal accident is reported. "Mr. Eugen Prosch from Würtzburg fell fatally from the Guglia di Brenta… crossing the northwestern edge at the so-called 'Garbarikanzel'. Disappeared behind the edge, the companions heard a scream, at the same time a jolt on the rope, which then went slack. The body was cut in two on a sharp rock. Prosch is said to have fallen about 200m."(1911 Mitteilungen). The 1911 Alpine Journal reports this same moment as "the sound of rock giving away, followed by an exclamation and a slight pull of the rope. The rope was on examination found to be cut clean through"(noting the fall as 400m!).

The testpiece of the era

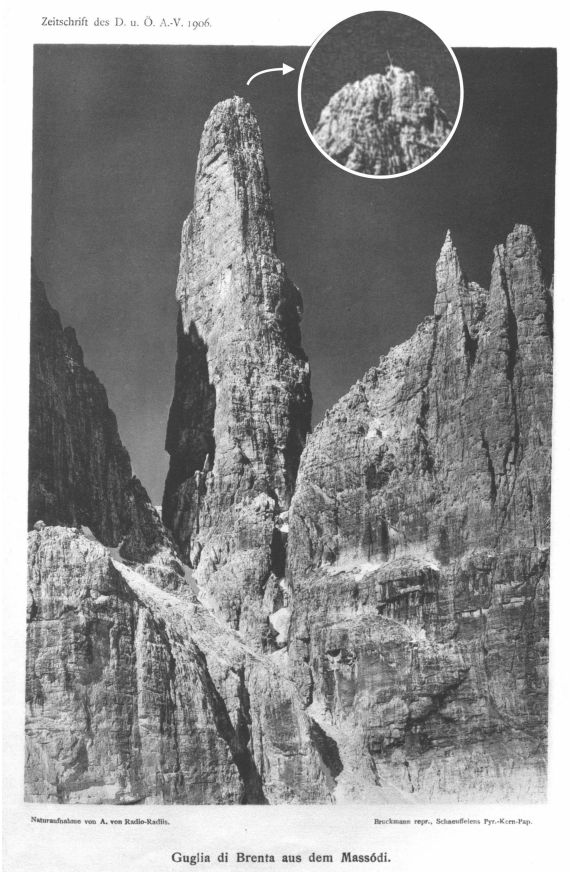
After the first ascent, Campanile Basso became a testpiece and "who's who" of the Eastern Alps, and eventually a "classic", with the British Alpine Journal noting exactly 619 ascents as of 1934. In 1903, Austrian alpinist Vineta Mayer with her husband and Joseph Ostler from Kufstein (Wilder Kaiser area) climbed the 8th ascent (first "Damen-Hocktouren" (Vineta's two sons, Guido and Max, helped pioneer the longest and hardest routes in the Dolomites a few years later). In 1908, the visiting American Oliver Perry-Smith led a bold new route up the SW face. Twelve years after the first ascent, Paul Preuss's solo first ascent of the east wall of Campanile Basso is one of the most spectacular onsight-solos in climbing history (a 500m route, which later became "well-pitoned" AJ1961). One of the climbers Tita Piaz most respected—along with Georg Winkler and Paul Preuss— was Rita Graffer, for her lead of the Preuss wall with her younger brother when the route was presumably not yet "well-pitoned" (she also established a new 350m route on the SW arete of Campanile Basso using 12 pitons in 1934).



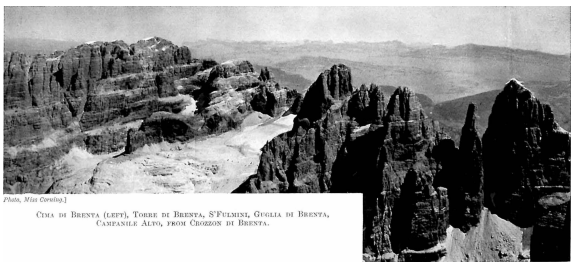
VISIONI DOLOMITICHE
Il Campanil Basso insorgente tra i colossi del Brenta.

L' arrampicamento italiano d' anteguerra

Damen-Hochtouren. Wie die „M. N. N." melden, haben die als kühne Dolomiten-Besteigerinnen bekannten Baronessen Eötvös aus Budapest mit den Führern Antonio Dimai, Giovanni Siorpaes und Agostino Verzi die erste Ersteigung des Torre del Diavolo in der Gruppe der Cadinspitzen ausgeführt. In der Monographie der Cadinspitzen von Ad. Witzenmann in unserer „Zeitschrift 1902" ist diese abenteuerliche Felsgestalt in Wort und Bild geschildert. — In der Brentagruppe hat Frau Vineta Mayer aus Wien mit ihrem Manne und zwei Führern die (erste Damen-)Besteigung des Guglia di Brenta ausgeführt.

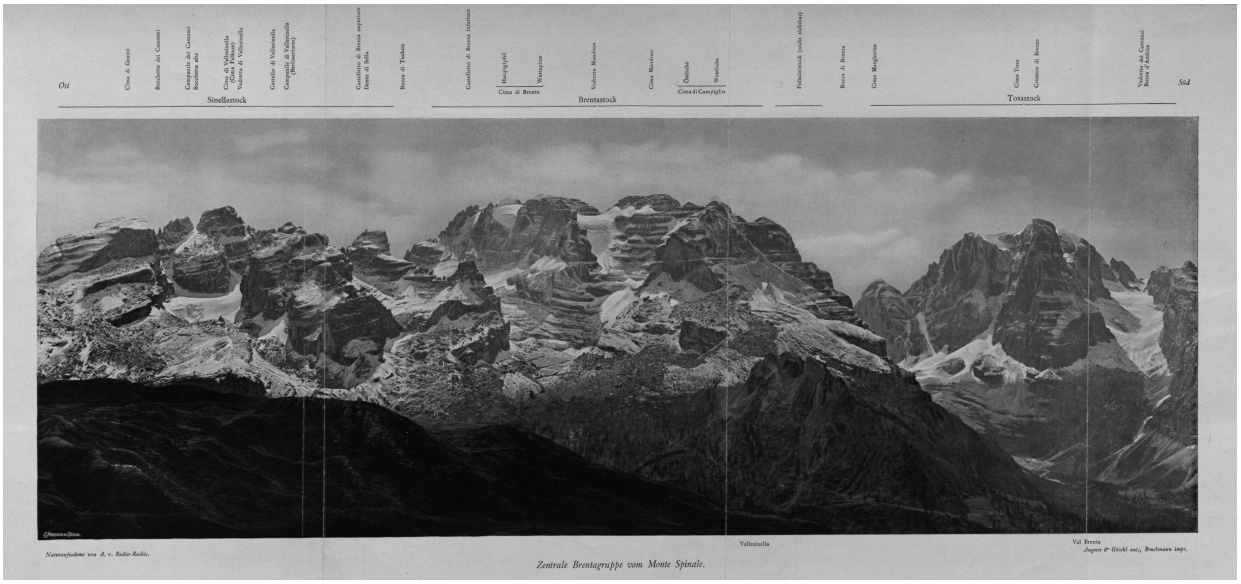

Zeitschrift des D. u. Ö. A.-V. 1906.
Naturaufnahme von A. von Radio-Radiis.
Bruckmann repr., Schaeuffelens Pyr.-Kern-Pap.
Guglia di Brenta aus dem Massódi.

The summit—and preferred name—of Campanile Basso/Guglia di Brenta became a patriotic platform, with climbers replacing any flags of other nations with one's own country flag, until eventually all parties agreed on sanctuary summit corners for their flagpoles. In this 1906 photograph, one of the famous flagpoles is visible.



Photo, Miss Corning.]
Cima di Brenta (left), Torre di Brenta, S'Fulmini, Guglia di Brenta, Campanile Alto, from Crozzon di Brenta.

1934 Alpine Journal article: "South Tyrol—or Thereabouts", by Ursula Corning



Brenta Group. Trento to the south-east is the major center of the region, then part of the Austro-Hungarian Empire. Società degli Alpinisti Tridentini (SAT) was founded in 1872 in Madonna di Campiglio, a more isolated area north-west of the Brenta Group. Their motto: "Excelsior!".

Conrad Kain: 42nd ascent of Basso, 1907

1907

5

THE GUGLIA DI BRENTA

We went to Mezzolombardo, and then to Molveno where we spent the night. On the way to Molveno we saw for the first time the famous Guglia di Brenta. Early next day we passed the Molveno lake. I think it is the most beautiful lake in South Tyrol. It is a long way to the Cima Tosa Hut. On the same afternoon we ascended the Cima Brenta Alta to get a better look at the Guglia.

Early on August 2nd we started for the Guglia di Brenta. In an hour and a half we had reached the foot of the climb. There we left behind everything except something to drink, and made ready for the ascent. Soon we were at the "Red Spot." One cannot go wrong from here, for there is only one possibility, only one exit. Who is unable to join up this bit must relinquish the Guglia. I thought it over carefully afterwards, and the final wall is really worse. But now I put my climbing technique above all doubts and thoughts.

Further up the southern wall the route was marked by strips of paper, and without more trouble it continues to the northwest flank. There I saw two iron spikes and a new rope-off ring. Without doubting that I was on the proper route I stormed upwards to the overhang. That stopped me! I tried it three times. Impossible! Dr. L. became impatient for he was getting cold. I told him to rope down, and I anchored myself. It came into my mind: 'This may be your last day!'

Dr. L. thought it unlikely that the correct route should have such difficulties that I could not overcome them. So I climbed back to the "Hole" to look at the guide-book. As I turned around I saw a little cairn. My heart grew lighter. I roped down and followed the correct route—a short traverse on the north wall—very much exposed. (To this day I have never done another bit so exposed.)

And now the finishing wall. Although I was completely out of breath [ausgepumpt] it gave me no trouble. We were the forty-second party to visit the Guglia, and I the seventh guide to ascend it. Descent everywhere required great caution; for a guide even greater care and good rope technique. At the bottom we put on our nailed boots once more. Joyously we returned to the hut.

On August 3rd we did the Torre di Brenta, a peak not often visited. We went close by the Guglia and saw for the first time what a magnificent tower it is. Naturally, both of us felt proud and happy. The Torre di Brenta is poorly described in "Hochtourist," and we looked for a long time until we discovered some nail-scratches, which we did not let out of our sight thereafter. There are two chimneys

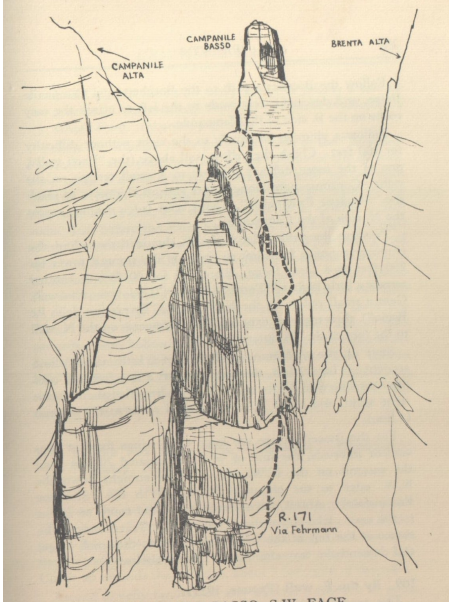
137

Left: page from Where the Cloud's Can Go, Conrad Kain's biography by J. Monroe Thorington.

right: Pete Crew's awesome 1963 Selected Climbs in the Dolomites with Illustrations by R.B. Evans. This guide was the very best source in English of the Dolomites testpieces into the early 1980's (my generation of dreaming).

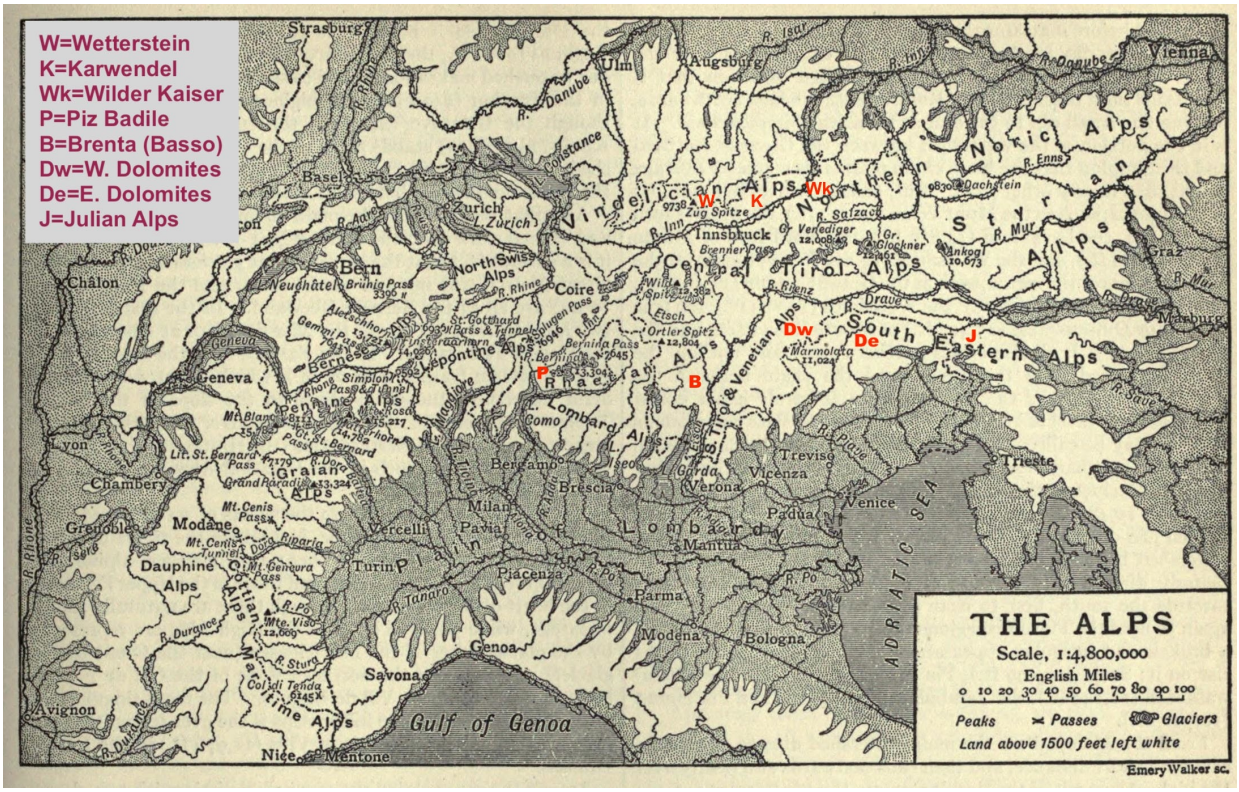
This is a variant.

(b) Original Route. Traverse beyond the first peg, as in (a), then decend about a metre and continue traversing to a reasonable ledge with 2 pegs, in total about 10m traversing at 4, stance. Now climb a diedre which goes up to a small yellow overhang. Below this, traverse left (peg), then climb a crack formed by a detached flake, to a small terrace, and stance with 2 pegs. Approx 35m of 4, with 4 pegs. From here traverse right about 4m, (4-), then climb over increasingly easy ground to the summit - approx 30m.



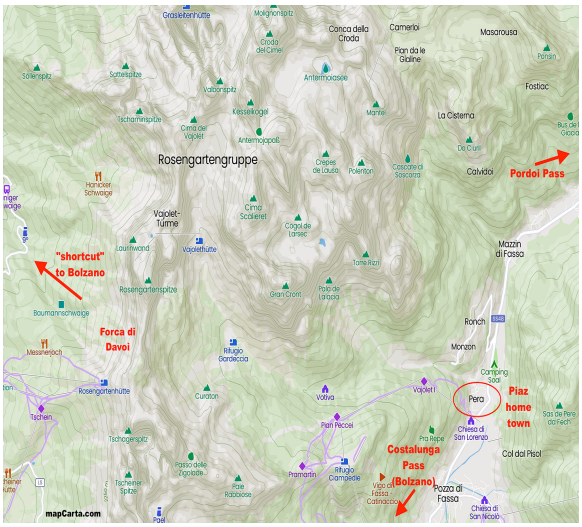
CAMPANILE BASSO, S.W. FACE

203

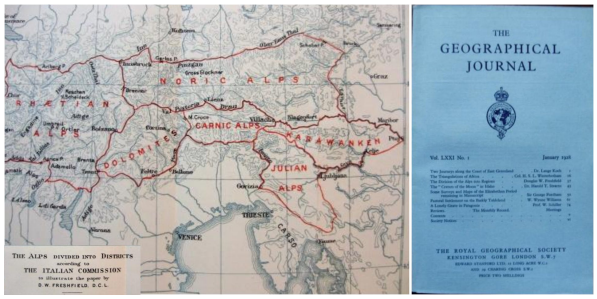


Eastern Alps Geography and Early Alpinism

Most of the big rock climbing breakthroughs of the first decades in the 20th century were in Austro-Hungary, a region with 14 major language groups. In north Tirol, there are the Wetterstein, Karwendel, and Wild Kaiser ranges—the German-speaking “Münich climbers”, Hans Dülfer and others, pioneered new big wall techniques in these ranges (next article). In the south, “Trentino, Cisalpine Tyrol with its geographical and natural frontier (the Brenner frontier)” (Treaty of London, 1915), the great Dolomite big walls: Marmolada, Civetta, Furchetta, Pelmo, Drei Zinnen, tall spires in Brenta and Rosengarten, all the valleys and ranges in the South Tyrol and Trentino region—areas all ceded to Italy in 1918.



Tita Piaz, who we will cover next, was from the Catinaccio/Rosengarten area in the south near the famous Vajolet Towers.



Alps delineations in the Royal Geographical Society's Journal, 1928

A language based map from 1918, perhaps as controversial as the Allied powers' division of borders after WWI. It does show the inclusion of the Tyrol, which became part of Italy, connected with the northern language groups.

Top: Pre-WWI Austria-Hungary.
Bottom: Italy before and after WWI

Tita Piaz-Alpinista Acrobatico (Piaz PartA)

Authors note: What has been fun about writing this history of technical tools is the familiarity of the path climbing history took from the first named Golden Age to the early steep rock climbing history of the Dolomites. I bumbled around the mountains my first few years of climbing (mid-70's), learning basic ice skills and common sense the hard way, like going for summit bids on stormy days and nearly getting hit by lightning only metres away, glowing ice axes abandoned. Or as a 17-year old guide for Telluride Mountaineering School, finding myself 1000' up on a steepening slab, too steep to downclimb, loose, and no belays. Myself, and two of the strongest student climbers of our seven-day traverse in the San Juans. "Clean" rack and nothing to protect—it was pretty clear we would all take the whipper if any one of us fell, and the sky was darkening. It was probably similar to how Carl Berger and Otto Ampferer felt on the Basso in 1899, we'd like to imagine. But I chickened out, and found an escape route to the side, above a steep couloir, and lucked out as the other guide of my team was just descending the walking route to the summit, and provided life-saving ice-axes to survive the step-cutting descent and then back to camp. It was pretty clear that a real rack, not just a mismash of big hexes and slings, to climb nice lines (which it was, a beautiful 1500' buttress), and that I needed a lot more practice on using the tools effectively. So now it's fun to write about Tita Piaz, after finally reading his memoirs thanks to online translation tools, as he inspired many and brought new elegance to climbing the steep cliffs all around them, and showed the world how it could be done.

Giovanni Battista Piaz (1879-1948)
Tita Piaz is one of the most fascinating climbers of the early 20th century, and it is surprising that so little literature in English is available on his extraordinary pioneering climbs (though many books in Italian, French and German). A year before he died in a bike accident, he published his memoirs "Mezzo secolo d alpinismo" (Half a century of Mountaineering)—all quotes below from his memoirs unless noted).

Tita Piaz grew up in Pera, the valley below the imposing Rosengarten summits and Vajolet Towers, in a house architecturally a mixture of cave and barn, with walls of tiny holds, cracks, dizzying traverses, and overhangs, "lending itself to the most varied exercises" (Casa Paterna). He writes he was

“born a monkey right out of the womb” and was always on the lookout for new moves in his natural home gym. Also nearby was a 15m crag which he would solo, much to the concern of his family and the awe of his friends, a bold climber of anything and everything vertical, as well as an impressive gymnast on the bar.

Casa Paterna, from Piaz, “Mezzo Secolo D’Alpinismo”, 2nd Edition, 1949

As a youth, Piaz once broadcasted his intent to climb the bell tower in Bolzano, 42 kilometres walking from his home in Pera, and everyone, knowing of his skill and daring, wanted to be there to witness the event. When the day finally came, he climbed the walls of the tower, shinnied up the long lighting rod, but just as he reached the famous wind-vane rooster on top, instead of celebrating and basking in the awe of the growing audience below, the police arrived (who knew him for other shenanigans), and he had to hightail a quick retreat, hiding in the belfry among “bats and spiders, mice and other similar creatures that probably also have strong reasons to escape from sunlight”. He remained huddled for hours until his friends found him and led him back into the light, but only after being assured that the “terrible priests of the urban law had left”.

The Bell tower of Maria Himmelfahrt cathedral, which Piaz climbed as a youth.

Piaz was what we today call a radical—he did not “suffer the stupid and cowards”—and was blunt about his dissatisfaction with any imposed rules over-indulged by society at large. He was a vocal irredento (Italian: “unredeemed”) who sought to reclaim independent nation-state status of the broader language group region then called—much to locals dislike—Welsh Tirol (now the autonomous Trentino province of Italy). He was antagonistic to the Austro-Hungary rule in which he was born, sometimes at expense of his personal freedom, and later opposed the rise of Italian fascism; in 1930 he was jailed as a subversive for his views. His contempt for the Nazis during their occupation in 1944 saw him treated brutally in prison for nine months, sentenced to death, but released as allied forces pushed north through Italy; soon after, he was elected mayor of his hometown. He lived a life on the edge, with many close calls.

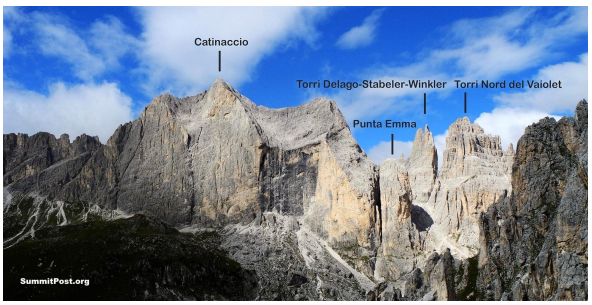
Tita Piaz with his second wife Maria Bernard and son Furio at Refugio Preuss

Tita Piaz was a family man too. After a what was likely a wild youth in matters of love, he married twice, in 1903 Tita to Marietta Rizzi, the manager of the Vajolet hut's daughter, and had three daughters: Olga, Pia, and Carmela. In 1913 he married again to Maria Bernard and fathered two more children: Nereo and Furio. He was an appreciated poet and writer in the Fassa Ladin language, and a renowned theatrical performer. He had a loyal dog named "Satan" who carried his ropes to the base of crags. He managed and built high mountain huts below the Vajolet Towers and other *Touristenheim* (tourist houses), sometimes at odds with building authorities, and was known as a loyal and generous friend to many in his community. Tita's tales in his book, "Half a Century of Mountaineering" are riveting and told with a wry retrospective awareness as he navigates the "crucible of the ideals of exuberant youth, the selection of values…".

The mountain guide Tita Piaz together with Arturo Tanesini, Giulio Gabrielli and grandchildren in September 1947.

Piaz begins, setting the stage: "Imitating Rousseau, I confess my mistakes with candor, running the risk of losing the esteem of all past, present, and future mountaineers; maybe I run the risk of attracting the wrath of the gods on my miserable soul, having reached the point of weakness and with no regret, can enjoy the memory of being so naïve before I entered the realm of true mountaineering. Let him who is without sin cast the first stone!" Before Tita knew anything about formal mountaineering, he set off to solo—because he knew no one with sufficient daring or who was "less unemployed than me"—a rocky summit on Forcella di Davoi where he had often passed with his father who worked both sides of the pass.

Technical rock climbing had begun in the region, Winkler soloed the first of the mythical Vajolet Towers seven years prior, and various alpinists had passed through town after having first ascended summits known to the locals, but Tita did not have any knowledge of the techniques except to climb up! High up on his first real rock climb at age 14, ropeless and making technical moves with dizzying exposure, he suddenly felt remorse for not listening to his worried mother, and "lashed by the most genuine fear", he retreated, and with the help of his good guardian angel, found himself back on reasonably inclined ground. "Defeated but, what matters most, safe and sound and out of the reach of so many horrors".



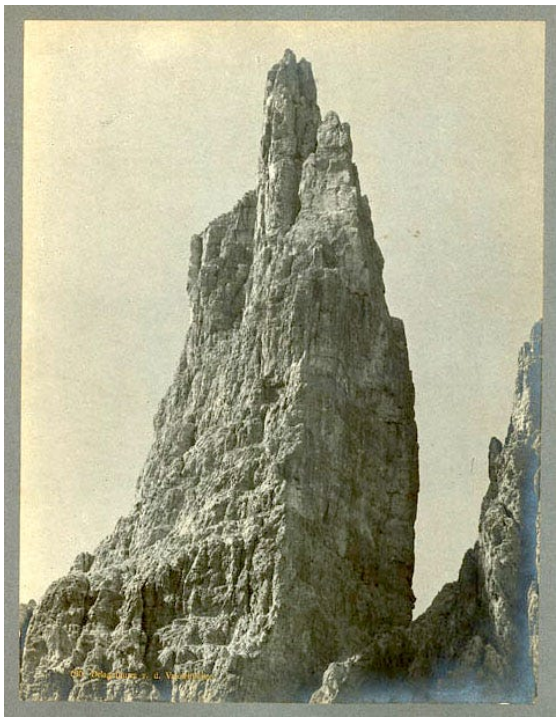
Back on safe ground after his attempt, Piaz was torn between two opposing forces: “fear and wounded pride”, and after chastising himself a coward, back he went, studying the line a little better, and soon summited without “even remembering any difficulties worthy of note.” Tita Piaz’s climbing career had begun.

Tita’s second climb: Col Ombert, a landmark summit above the Fassa Valley. Later, an airy via ferrata was later installed as part of the WWI Schützen strategic frontline.

Emboldened by a climb with two friends of Col Ombert, the high peak on the other side of the valley, Piaz felt he was ready for the mighty Catinaccio, the imposing summit of the Rosengarten range. He had heard there was a spring on top, and imagining an Arabian Nights landscape, had to see for himself. He arrived at the hanging valley where the Vajolet Rifugio was later built, and got the first good view of the approach gully between “sinister, threatening towers”—one of which would later be christened Torre Piaz—and the “gloomy wall” he would later name Punta Emma. Legends had it that shepherds had made it to the summit, but once again, alone on a 200m steep headwall, he was confronted by fear and doubt, and after praying for his salvation, retreated and hiked back to town, feeling shamed by his perceived cowardice.

The following year, he managed to lure his two friends who climbed Col Ombert with him for another attempt at the Catinaccio. Armed with alpenstocks “as long as a year of famine” (the longer the alpenstock, the better the mountaineer, he mocks) and with two litres of grappa (a type of strong brandy, polished off before the rock climbing even began), they climbed in their socks, ropeless, to the summit. Of his memories on top, he writes, “This was one of the most beautiful moments of my life as a mountaineer, a luminous beacon of my memories that still sends auspicious rays to my soul”— if he had one day to re-live, it would be that moment of bliss. In a footnote, he retrospectively notes that the intoxicating combination of “the miraculous power of grappa” and beautiful summit temples would be a bane for some mountain guides, which he was soon to become.

Tita had been expected to gain a teaching degree in Bolzano, but the lure of the mountains was just too great, and he quit his master’s studies before completion. By this time, the Torre Winkler had been regularly climbed and guided, and he had



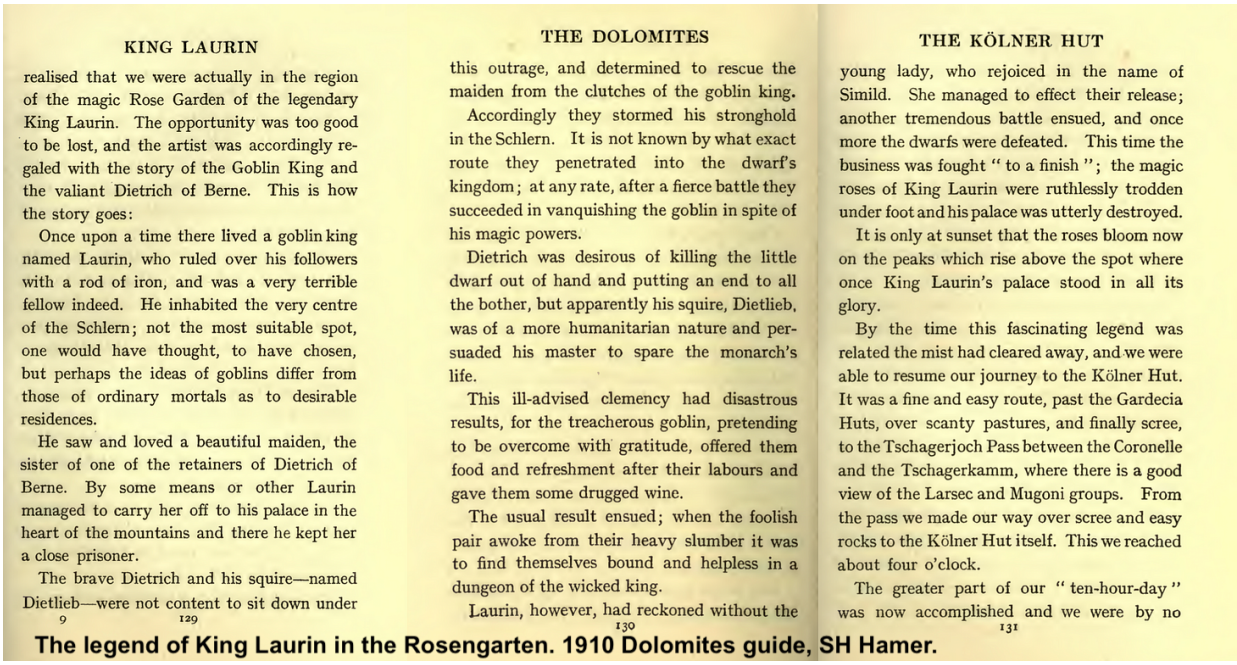
Torri del Vajolet, Catinaccio CAISiDoc

heard that mountain guides collected 50 fiorini (then the same cost for a cow) for guided ascents. He couldn't believe it was possible to earn such an astronomical amount in half a day. He became obsessed with climbing and guiding the famous towers.

Not yet 20 years old, he climbed Torre Winkler with a friend, "infinitely below me in skill" and 20m of old rope, "not even worth tying two sheaves of hay together". The ascent was witnessed in awe by patrons of the recently completed Vajolet Rifugio below. Proud, for him it was the cumulation of an impossible dream, and the news of his ascent spread widely and gained the attention of other climbers, including the renowned guide Luigi Rizzi (who later partnered with Dibona for some of the biggest walls of the era).

With his rise to stardom, he sought a paying client for the adventure on the Torre Winkler, but his reputation as a wild daredevil preceded him, and no one would sign up for a paid guided trip with this "crazed captain" without permit ("bootleg guiding" as we say now—by this time guiding was a certified profession in Austro-Hungary). For practice, he took a number of "poor victims" to the summit of Torre Winkler, from all social classes—women preferred, he notes. It made no matter to him that they were "devoid of any abilities and filled with fear"; indeed, the less skill and more fear, the better as practice for a paying client. He made ends meet by portering loads from town to the Vajolet Rifugio and other areas (as a 'carrier'), but he felt working as a lowly porter was beneath him, yearning to be set free on the cliffs of the high summits all around.

At this point in mountaineering history, the Rosengarten group had become well known. The German Austrian alpine journal published a 44 page monograph on the range in 1884, and another 40 page report in 1897, mostly defining nomenclature in both German and Italian—most of the landmarks in this area had various names in different languages. (later, in the German journals, complaints of Piaz's insistence on only using the native Ladin/Italian names was reported).



KING LAURIN

realised that we were actually in the region of the magic Rose Garden of the legendary King Laurin. The opportunity was too good to be lost, and the artist was accordingly regaled with the story of the Goblin King and the valiant Dietrich of Berne. This is how the story goes:

Once upon a time there lived a goblin king named Laurin, who ruled over his followers with a rod of iron, and was a very terrible fellow indeed. He inhabited the very centre of the Schlern; not the most suitable spot, one would have thought, to have chosen, but perhaps the ideas of goblins differ from those of ordinary mortals as to desirable residences.

He saw and loved a beautiful maiden, the sister of one of the retainers of Dietrich of Berne. By some means or other Laurin managed to carry her off to his palace in the heart of the mountains and there he kept her a close prisoner.

The brave Dietrich and his squire—named Dietlieb—were not content to sit down under

9 129

THE DOLOMITES

this outrage, and determined to rescue the maiden from the clutches of the goblin king.

Accordingly they stormed his stronghold in the Schlern. It is not known by what exact route they penetrated into the dwarf's kingdom; at any rate, after a fierce battle they succeeded in vanquishing the goblin in spite of his magic powers.

Dietrich was desirous of killing the little dwarf out of hand and putting an end to all the bother, but apparently his squire, Dietlieb, was of a more humanitarian nature and persuaded his master to spare the monarch's life.

This ill-advised clemency had disastrous results, for the treacherous goblin, pretending to be overcome with gratitude, offered them food and refreshment after their labours and gave them some drugged wine.

The usual result ensued; when the foolish pair awoke from their heavy slumber it was to find themselves bound and helpless in a dungeon of the wicked king.

Laurin, however, had reckoned without the

130

THE KÖLNER HUT

young lady, who rejoiced in the name of Simild. She managed to effect their release; another tremendous battle ensued, and once more the dwarfs were defeated. This time the business was fought "to a finish"; the magic roses of King Laurin were ruthlessly trodden under foot and his palace was utterly destroyed.

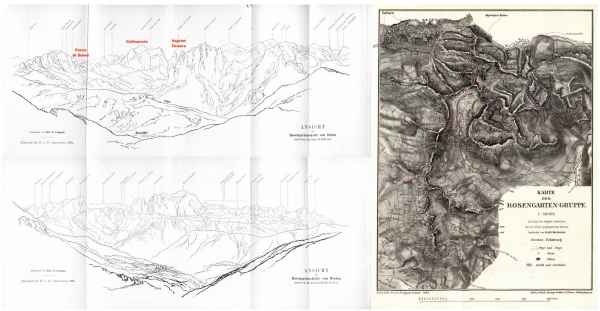
It is only at sunset that the roses bloom now on the peaks which rise above the spot where once King Laurin's palace stood in all its glory.

By the time this fascinating legend was related the mist had cleared away, and we were able to resume our journey to the Kölner Hut. It was a fine and easy route, past the Gardecia Huts, over scanty pastures, and finally scree, to the Tschagerjoch Pass between the Coronelle and the Tschagerkamm, where there is a good view of the Larsec and Mugoni groups. From the pass we made our way over scree and easy rocks to the Kölner Hut itself. This we reached about four o'clock.

The greater part of our "ten-hour-day" was now accomplished and we were by no

131

The legend of King Laurin in the Rosengarten. 1910 Dolomites guide, SH Hamer.



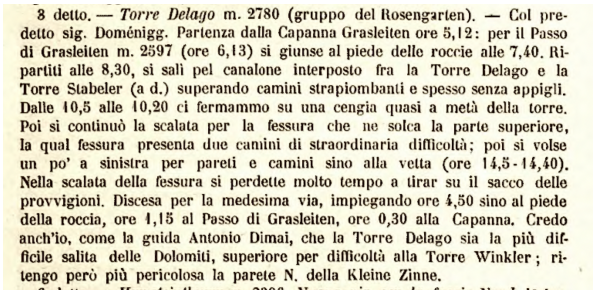
Maps and detailed Information on climbing in the Rosengarten appeared in the 1884 Zeitschrift des Deutschen und Österreichischen Alpenvereins.

The word on the Rosengarten was out, and many mountaineers came from all over Europe to climb there, and Piaz began finding clients for his guiding ambitions. The area's famous legends were also a draw— King Laurin's magic garden of roses— hiking in the range can be reminiscent of the time of dwarves and castles (one feels small amidst the wilderness of towers). In short, the Rosengarten was a destination with journeys to share. As the area became better mapped and identified in the German language journals, many northern mountaineers realised the potential for first ascents on majestic summits.

Eventually Tita contracted a client for the Catinaccio for seven fiorini, thanks to being at the right place at the right time—the client's hired guide had failed to show up at Vajolet Rifugio on the day of the climb. Worried of the professionalism of his gear, Tita distracted his client with tales of the Winkler and Delago towers, painting the horrors of these climbs to prevent the client from noticing Tita's worn and battered rope as Tita tied him in. About 50m up: "probably in the heat of showing off my extraordinary ability, I moved a huge boulder that with the roar of hell, fell toward the abyss, missing my poor pupil's head by a few centimetres". Pale and trembling, the client glared at Tita, but then said good-humoredly, "She starts well," and they continued to the summit and back without further mishap.

At the rifugio, much to Tita's astonishment after the close brush with death, the client asked if he could next be guided up Torre Winkler the next year. Yes! he was becoming a guide. On the triumphant hike back to town—tattered trousers, rope over the shoulder, rock shoes tied outside his pack—classic guide posture—he couldn't believe his luck, especially when the client tipped 3 extra fiorini. His wages were spent in their entirety that night, celebrating and playing skittles at the Café Larcher.

In 1894 Hermann Delago had climbed the westernmost Vajolet Tower, (Torre Delago), calling it harder than Winkler's route. By 1898, Torre Delago was considered the most difficult climb in all the alps, the absolute limit of possible[22]. Only a few of the best guides and climbers—Dimai, Bettega, Zugonell, Rizzi, Innerkoffer—dared repeat it, and guideless ascents were big news.


3 detto. — *Torre Delago* m. 2780 (gruppo del Rosengarten). — Col predetto sig. Doménigg. Partenza dalla Capanna Grasleiten ore 5,12: per il Passo di Grasleiten m. 2597 (ore 6,13) si giunse al piede delle roccie alle 7,40. Ripartiti alle 8,30, si salì pel canalone interposto fra la Torre Delago e la Torre Stabeler (a d.) superando camini strapiombanti e spesso senza appigli. Dalle 10,5 alle 10,20 ci fermammo su una cengia quasi a metà della torre. Poi si continuò la scalata per la fessura che ne solca la parte superiore, la qual fessura presenta due camini di straordinaria difficoltà; poi si volse un po' a sinistra per pareti e camini sino alla vetta (ore 14,5-14,40). Nella scalata della fessura si perdette molto tempo a tirar su il sacco delle provvigioni. Discesa per la medesima via, impiegando ore 4,50 sino al piede della roccia, ore 1,15 al Passo di Grasleiten, ore 0,30 alla Capanna. Credo anch'io, come la guida Antonio Dimai, che la Torre Delago sia la più difficile salita delle Dolomiti, superiore per difficoltà alla Torre Winkler; ritengo però più pericolosa la parete N. della Kleine Zinne.

1898 report on Torre Delago. The author notes, like Dimai, the Delago Tower to be the most difficult climb in the Alps, but believed the Kleine Zinne (Innerkofler/ Helverse,1890) to be more dangerous.

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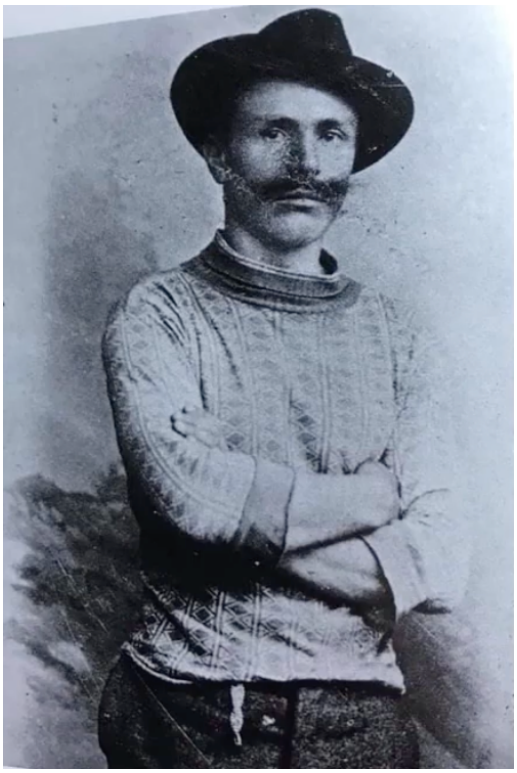
[22] Note: the middle Vajolet, Torre Stabeler, had been climbed in 1892 and was considered considerably easier than Torre Winkler.

Tita joined up with an old school friend, Antonio Schrott, for an ascent of the feared Delago route, perhaps the 10th ascent. Schrott was also a bold amateur climber of note, having climbed the Winkler route and other testpieces. The only thing they knew of the route was that there was a difficult smooth chimney that required good technique—of which they knew none! Piaz writes about squirming up the chimney like a snake, at his limit, only having made it thanks to his gymnast abilities and grit, "arriving at the summit with the last breath that remained in my body, I screamed to the universe, 'The world belongs to the brave!'"



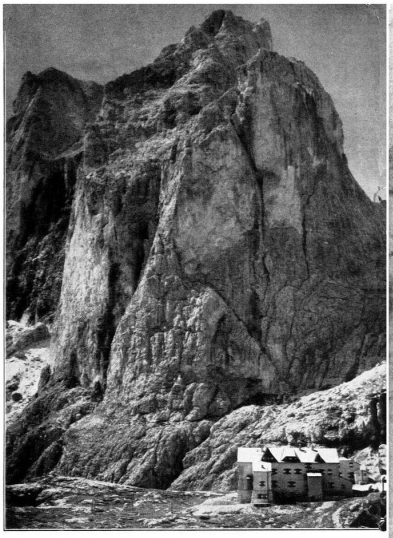
Tita Piaz, around 1900

Tita muses how at the time he was in search of an unclimbed tower he could give his name to: "Piazturm!"— then clients would be coming from all corners of the world for the "honor of attaching themselves to my rope," and he would be suffocated by the multitude of customers, rushing like dogs to the door of a lover. It would be raining fiorini! Later, in response to doubt from a guide who didn't believe could have climbed the Delago with the technique and way he described, Tita boasted that he could and would climb the prominent and fearsome unclimbed chimney on the north pillar of Catinaccio (now Punta Emma). Tita made a bold entry at the Rifugio, advertising: "First climb of the North Pillar of Rosengarten; difficulties not much higher than the Stabeler. Tariff: 25 Fiorini" even though he hadn't yet climbed the route!

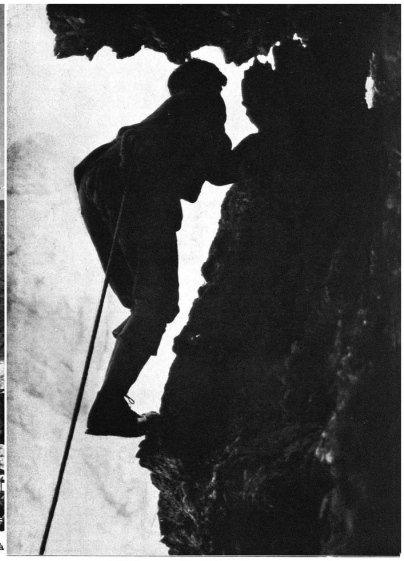
Now that Tita had laid claim for his climb in words and writing, it was time to "launch" the route. Again, in pages of writing, he describes his bravado and how his first ascent of Catinaccio's north pillar would launch him into greatness (he precedes many of his climbing stories—tongue in cheek—with this kind of swaggering prologue). He first found a way to the summit from the northeast (as descent route), then, while attempting the first ascent of the 300m buttress, he methodically climbed to a particular crux—an overhanging roof—then down-climbed for a break and further review. Theodor Christomannos, the secretary of the German Austrian Alpine Club, witnessed one of the forays. Back at the Rifugio, Christomannos put 17 fiorinis in Tita's hand, and said, "Dear Piaz, buy yourself some decent climbing shoes and you'll be able to do it"[23]. The

[23] The gravestone for Christomannos (1854-1911) bears the inscription, according to Piaz: "The man who wanted everything for others, nothing for himself." Christomannos, the son of a wealthy Greek family of merchants living in Vienna, was instrumental in creating the "Great Dolomites Road" connecting mountain ranges from Bolzano to Marmolada, and was known to be a generous donor public good in Merano (Bolzano area). Piaz remained grateful to Christomannos for his gift of real climbing shoes, even when he later became a political enemy and said that Christomannos "tried to hurt me".

moral support and the better shoes helped, and Tita's subsequent solo first ascent of Punta Emma set a new standard. But it was not to be named "Piazturm"—Piaz Tower—as honor demanded "his" tower be named by a partner, not himself. This one he named after the Vajolet hutkeeper's assistant, Emma Della Giacoma, after he took her up the easier route to the summit. The north buttress chimney on Punta Emma was one of the longer hard rock climbing routes (5.8) in the Alps for some years ahead.



La Punta Emma si presenta dal versante prospiciente il Rifugio Vaiolett della Società Alpinisti Tridentini con la precipite parete che fu vinta da Tita Piaz lungo il « camino » centrale.



Un passo difficile lungo la « via Piaz » della Punta Emma (fot. *A. Andreoletti*).

Punta Emma. Piaz soloed the prominent crack in the middle of the main buttress directly above the Rifugio in this picture. 300m vertical, 9 pitches, 5.8. The route involved the lie-back climbing technique, better known as Piazen or Piaz-Technik.

From 1902-1912, Tita was part of a growing cadre of technical big wall climbers who set new standards in the Eastern Alps. His protection systems were advanced for the time, he became one of the most efficient first ascentionists of the era. We'll look at some of his 50 first ascents (and descents) to see what we can figure out of his mastery of pitoncraft, as well as other technology, such as footwear, which was another primary driver of advancing rock climbing standards of this era.

Die Punta Emma im Rosengarten, ca. 2500 *m*. Der prächtige Blick von der Vajolet Hütte zu den Vajolettürmen und ins „Gartl" mit den neugierig hereinlugenden Zacken der Laurinswand wird linksseitig begrenzt von einem mit einer kolossalen, steilen Wand abstürzenden Ausläufer des Rosengartenhauptstocks, der nach seiner Erstersteigerin Emma Della Giacomo „Punta Emma" genannt wird. Die Besteigung dieses Ausläufers von ca. 3500 m Höhe kann Kletterfreunden angelegentlich empfohlen werden; sie ist auf zwei Wegen möglich: einmal von der die Punta Emma vom Rosengartenmassiv trennenden Scharte in nicht zu schwieriger, hübscher Kletterei. (Von der Hütte ca. 1½ St.) Auf diesem Wege wurde sie überhaupt zum ersten Male von dem bekannten Dolomitenkletterer G. B. Piaz im Jahre 1899 und dann unter seiner Führung von der genannten Italienerin im August 1900 erklettert. Seither wurde sie nur noch siebenmal erstiegen, darunter im August 1906 zum ersten Male führerlos von E. Kronstein-Wien und dem Unterzeichneten. Die zweite Anstiegsmöglichkeit bietet eine Klettertour ersten Rangs. Die der Vajolet Hütte zugekehrte, so im-

Nr. 17. Mitteilungen des Deutschen und

posant aufsteigende Nordostwand ist nämlich zum größten Teile von einem charakteristischen, gewaltigen Kamin durchzogen. Durch diesen Kamin erkletterte G. B. Piaz den Gipfel schon im Jahre 1899; unter seiner Führung gelang dem Unterzeichneten im August 1906 die erste touristische Ersteigung des Gipfels auf diesem Wege. Der Einstieg zum Kamin wird von dem Wege zum „Gartl" unschwer über Schrofen erreicht; der Kamin selbst ist durchgehends sehr schwierig und exponiert und bietet mehrere ganz hervorragend anstrengende Stellen, besonders bevor er sich zu einem breiten Stemmkamine erweitert. Durch einige schwierige Überhänge unterbrochen, wendet er sich schließlich nach links und an seinem Ende ansteigend, gelangt man über gutgestuftes Terrain in leichter Kletterei nach rechts zur Spitze. Vom Einstieg bis zur Spitze ca. 2 St. Ebenfalls im August 1906 wurde dieser Kamin abwärts zum ersten Male von Herrn Ingenieur Th. Insam-Nürnberg mit G. B. Piaz durchklettert, respektive durch Abseilen überwunden. Auf beiden Seiten ist die Ersteigung eine sehr reizvolle Nachmittagsexkursion von der Vajolet Hütte aus. Landgerichtsrat *C. Müller*-München.

1907 Mitteilungen des Deutschen und Österreichischen Alpenvereins. The next five ascents of Punta Emma were climbed by Piaz with different partners (likely unofficially guided ascents led by Piaz so not reported in detail).

Climbing shoes of circa 1910: Thin leather shoes with twisted rope soles. Right: modern twisted rope sole.

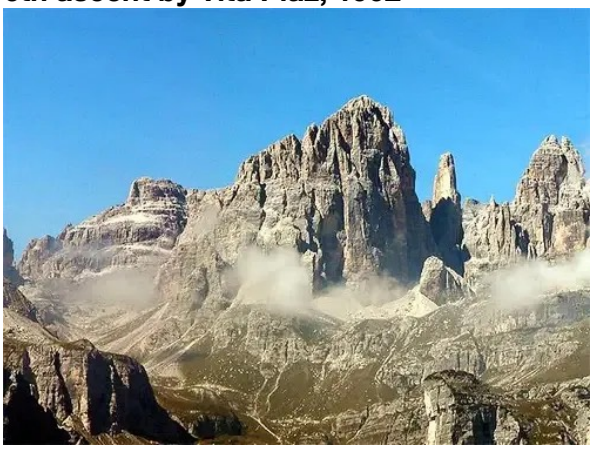
Tita Piaz-Speed Climber and Rope Acrobat (Piaz PartB)

Authors note: I love spires. Climbing the first one-day ascent of the Lost Arrow Spire from its base was a fun day with Dave Schultz when we climbed the 1200' route in eight hours, but when I got out in the Southwest deserts, I really fell in love with climbing spires. The Totem Pole in Monument Valley with Bridwell was memorable, but really an anomaly as it was a repeat of a well-climbed tower. I got started with Dave Insley around 1986, we climbed Agathla (one of the wildest rides ever) then the Totem Pole (my first time up), and I discovered an experience like nothing felt before. Using a combination of hard bold free and quick dynamic aid, the efficiency of movement on terrifying thin towers of rock, and always with an airy summit to appreciate the moment, was intoxicating. Here, proficiency in the technical aspects of rope and protection are the key to safely ascending--and descending--new routes. I probably climbed about 50 spires in the Southwest deserts, similar to Piaz's record of first ascents in the Dolomites, so his pioneering routes back in the 1900's on the vast array of unclimbed spires all around him is incredibly inspiring to look back on. It is also interesting to map Tita Piaz's attitudes on risk, as it evolved with his climbing style and ambitions.

Part of the reason I have gone into such depth of Tita Piaz's early climbing career, is that it's probably similar to many climber's introduction to rock climbing even well into the 70's, the age of stiff goldline ropes. As a beginner, hearing and vaguely knowing of great climbs and climbers, with little or no access to good information or guidance, and eventually going out and figuring it out for oneself, often with a few close calls. Then, choosing to live the full time climbing lifestyle, scrapping for any work and spending cash quickly, the only thing that matters is the next climb (an 80's version in the Valley included scarfing and searching for aluminium deposit cans, being ready for rigging and film work, bootleg guiding El Capitan—twice for me—living from rescue check to rescue check, and very gradually getting better set up. In my case, getting a van—with no motor—as a winter survival shelter between climbing seasons, probably at least as good as an seasonal bivy spot in the Rifugio ;).

"There's something happening here, what it is ain't exactly clear"—Buffalo Springfield

Campanile Basso,
6th ascent by Tita Piaz, 1902



In his hometown of Pera, Tita Piaz read of the ascents of distant Guglia di Brenta/ Campanile Basso in the journals; the "striking photographs" of the spire gave him the chills. The second (1900) to fifth (1902) successful ascents were all climbed "without guide" by the top climbers from Munich and Vienna. Each successful ascent--amidst many failed attempts--eclipsed all other news, "even the south wall of Marmolada," Piaz writes, "clearly this (climb) was more technically difficult and required greater courage, (so) I decided to try it too so not to be inferior to anyone."

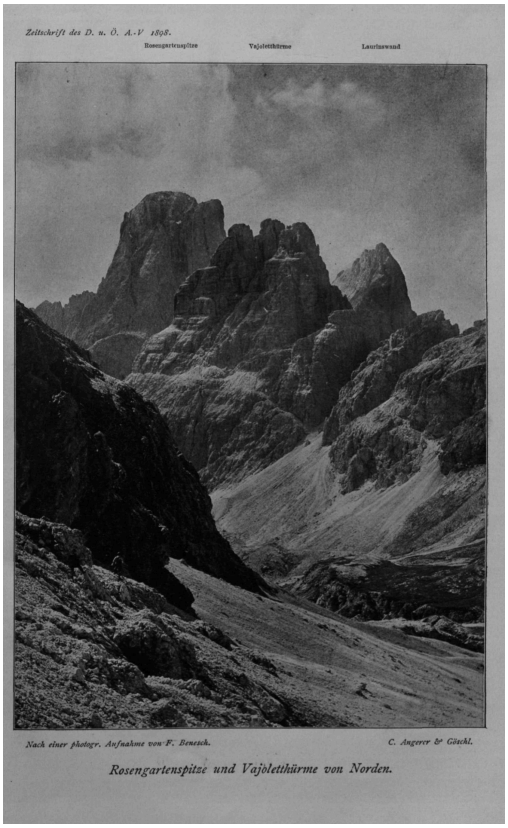
It was Tita's first climbing trip to the Brenta group near Trento. Piaz, not yet an official guide but fully committed to the guiding profession, invited Franz Wenter from Tires, a friend who had also been "making a name for himself" in the climbing and guiding world. They climbed Campanile Basso with the idea of testing its potential as an adventure they could offer clients, and their "first Italian ascent" was celebrated widely. Piaz notes: "We reached the summit in a shorter time than all our predecessors," finding the route, especially the traverse, very acrobatic and more difficult than anything on his home Vajolet Towers. He and Wenter agreed that two guides would certainly be required for its traverses and

"long stretches of wall without intermediate comfortable stances", and the two friends made a partnership deal that if one of them ever snagged a client for Campanile Basso, they would join forces to guide it together[24]. Regarding the 'deal' of guiding it together with Wenter, Piaz writes cryptically in a footnote, "*Man proposes, God disposes.*"

Piaz guided Campanile Basso many times in his career; it was probably a standard favourite for his most competent clients, which he was able to climb quickly and most efficiently (he got it "wired" in other words, similar to how many climbers have the Nose of El Cap "wired" for a day climb). Years later, Piaz climbed the Campanile Basso and the Vajolet towers in a single long day, with a wild motorcycle ride in between.

Speed Climbing Prowess

Piaz's ascent of Campanile Basso no doubt expanded his awareness of pitons and protection systems used by the Austrian climbers, but also a realization that he was one of the fastest climbers in the Dolomites, a tremendous asset in the mountains where the weather quickly changes. One of Piaz's early noted speed climbing adventures was a day in 1898 when he climbed seven summits in eight hours, earning him his nickname, "Devil of the Dolomites." He started the day exploring a new route, solo —a first traverse of the huge east wall of Catinaccio. On the descent, he met Luigi Bernard, who was guiding two clients up the easier main ridge. They had last seen Piaz at the rifugio below and were now bewildered to see Piaz coming from the other direction, descending from the summit. "How can this be?" they asked. Piaz then explained how he run up the fearsome east wall, with a lively explanation of the extreme challenges and exposure, whereupon Bernard replied, "*Tu sei un demonio*!" ("You are a devil!").



Rosengartenspitze und Vajolettürme von Norden.

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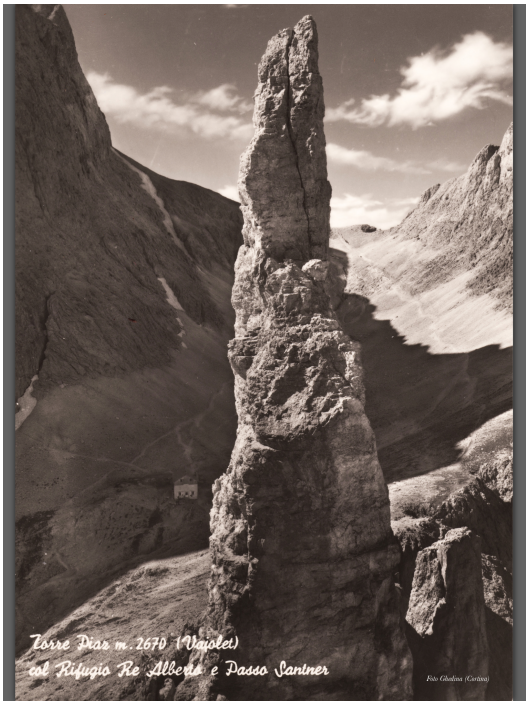
[24] In the 1906 DuÖAV journal: "(the Piaz/Wenter 1902) ascent, in particular, has become important for the future of the Guglia, because the first and still only authorized German mountain guide got to know and love this first-class climbing tour and since then, as a Guglia specialist, has climbed it many times." Before Piaz was an official guide, he was climbing with a wide range of clients as a "carrier" or "bearer", which is essentially an apprentice guide required to work with a fully authorised guide. According to Alfredo Paluselli, Piaz was kicked out of the Fassa section (South Tyrol) of the Alpenvereins, and refused to disavow the Trento SAT in favor of the DuÖAV, a choice that "put one's work at risk, as the tourism of those years was very much linked to the presence of German customers." In 1906, an official complaint was filed against Piaz by Luigi Bernard, another Fassa guide, for "abusive exercise of the mountain guide profession." Piaz then networked with contacts in Innsbruck (North Tyrol), took the guide's course in Bolzano, and became an official guide noted by the 1907 Mitteilungen as: "not under supervision of the Alpenvereins". Thereafter Piaz is referred to as Führer (leader) Piaz in the journals, a title reserved for official guides, though he was a widely known and sought-after guide for many years before his official authority to guide by the DuÖAV.

Piaz then bounded away, ropeless and literally running the steep ridge descent, dancing down sections of 4th class to the col. “I then climbed the Laurino Wall in one breath. With no diminished fury, the second tower, then the third, and here, catching my breath,” Piaz pauses here to describe his audience of Bernard’s team, just making it back to the col after their climb, and the crowd in view at the Rifugio below, and continues: “Whipped by the chorus of clapping of ‘Hoy! Bravo Piaz!’, I continued the mad race on the crumbly, dangerous rock: fourth, fifth tower, still forward, no rest. Seven tips in eight hours! The fame of my epic deeds precedes me as a Roman triumphant at the Rifugio del Vajolet. A German gentleman inspected me a long time with his glasses, then solemnly said, ‘*So this is what a devil looks like.*’”[25]

Tita’s tight-fitting canvas shoes with twisted rope soled shoes completely wore out that day, and with bleeding feet: “I considered it my sacred duty to exhibit the miserable remains of my famous shoes that had taken me to glory in the fantastic flight--historical relics worthy of a museum labeled ‘Tita Piaz’s shoes, 7 summits in 8 hours.’ as precious as the Mona Lisa!”, and he hung them up prominently in the dining area. Piaz then notes how the next morning, the visiting Liepzig DuÖAV vice president summarily ordered “*the crappy rags to disappear immediately!*” and the unappreciated stinky shoes were never seen again.

In addition to the first ascent on the east face of Catinaccio, Piaz’s routes that day included a 20-minute ascent of Torre Delago and the first ascent of “little tower next to it”, later christened Torre Piaz. Piaz became a wild pioneer of interesting linkups and fast ascents involving bold and gymnastic free



climbing. Around 1906, records were formally reported in the DuÖAV journals, usually with odd disclaimers such as the club’s inability to formally “support hot competition for records in alpinism”.

One morning on the 700m Tomasson Route on Marmolada--another climb he guided many times--Piaz clocked in at 3 hours, 28 minutes, with the report emphasising, “by no means was this speed at the expense of security.” In 1906, he climbed all three of the Vajolet Towers in a record 1 hour and 37 minutes. In his book, Piaz writes joyfully of the days of pure climbing, clocking up miles of vertical, often solo, but also with friends. In 1908, Piaz with Käthe Bröske and Rudolf Schietzold as ropemates climbed the first traverse of six Vajolet towers from north to south involving a “frightening descent of 100m”, that required a free-hanging swinging to a narrow ledge halfway up an overhanging wall, as reported in *Quo Vadis.*

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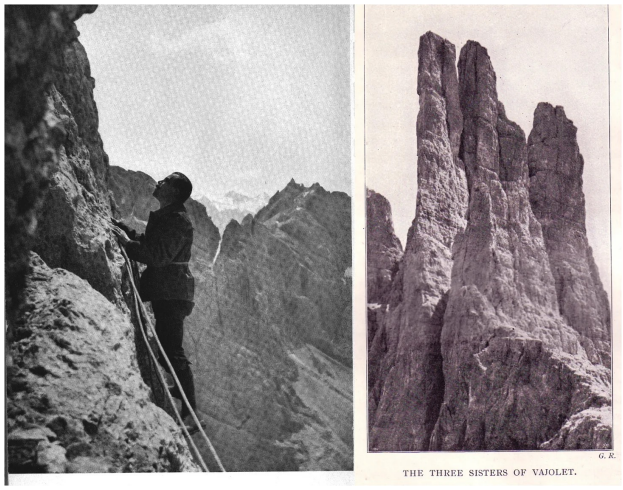
[25] footnote: Bernard’s Italian term for devil is “demonio”, the German gentleman’s term is “Teufel”. quotes from Piaz’s biography, Mezzo Secolo D’Alpinismo, 1947.



THE THREE SISTERS OF VAJOLET.

Left: Piaz on the south wall of Marmolada. Piaz's 1906 record of 3 hours 28 minutes on this 700m route was a mind-blowing event. The original 1901 ascent required a long long day (an amazing feat at the time), and other parties had required bivouacs for their ascents of this "Half Dome size" wall. Right: The Vajolet Towers from Guido Rey's Alpinismo Acrobatico, 1913.

Master Rigger and Rope Acrobat

What becomes clear looking at Piaz's early climbing years and achievements, was that Piaz was becoming a master rigger and rock anchor engineer between 1902 and 1908. The classic routes were getting progressively equipped—fixed pitons at key locations for belays, protection, and descent, especially on routes he had "wired" (climbed many times). The strategic anchors allowed for quick rappels and security at belays to enable faster, more efficient climbing, and most importantly for Piaz, safer with guided clients and on his frequent climbs with friends and family who were often beginners. Piaz's climbing endeavors were controversial and he faced considerable criticism[26]. His wild rappels were dismissed by Franz Nieberl as "contrived (and) outrageous rope maneuvers, gymnastic exercises that do not belong in the mountains." His piton use was considered excessive by some, and later in life he admitted to sometimes overdoing it, as Preuss wrote, "to tame a huge wall by means of complete equipment from a blacksmith's shop"[27]. But mostly, Piaz climbed in an elegant, efficient way, especially after the essential fixed anchors were placed on the first ascent.

After a cordial but divergent public debate and others on the appropriate use of artificial means ("mezzi artificiali") in the German and Austrian journals--the famous "MauerhakenStreit"--in 1913 Piaz invited Preuss to "try the invincible wall of the Schüsselkar south wall, the problem of problem of those times, and resisted even the assaults by climbers like Fiechtl". It was clear to Piaz after prior attempts that the line would involve considerable nailing, and perhaps some aid, but Piaz's idea was that he would '"take on all the shame of artificial means" so his friend Paul would have his own "share of the glory."

Lisa Fries, "the most famous mountaineer of the time" also joined the team. From previous attempts, Piaz felt he knew the best line for the team, especially with another exceptional free climber like Preuss. Several pitches up, Piaz insisted on a "sicurezza" (security), but Preuss refused,

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[26] In all things, Piaz had his "own way" of doing most things: hut management, guiding, politics, and theatre: he mocks the imagined apoplexy of the Munich climbers upon reading his frequent reports in the journals, succeeding on another route "with a few hundred meters of rope and several dozen nails." There are 72 references to chiodi (nails) in his book. By all accounts, however, Piaz was a purist in climbing as free as possible, and dismissed excessive use of aid pitons as "devoid of modesty and dignity."

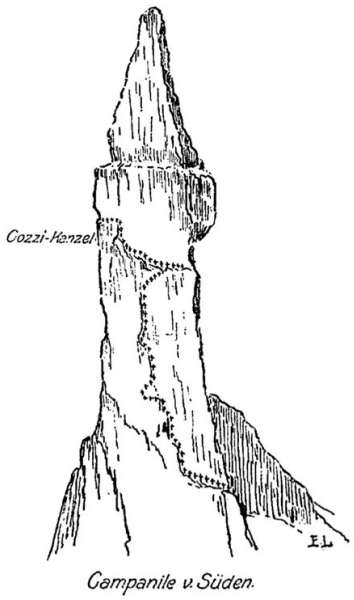
[27] Here Preuss might be referring to the attempt on the Schüsselkarspitze in the Wetterstein range (north Tirol) with Piaz.

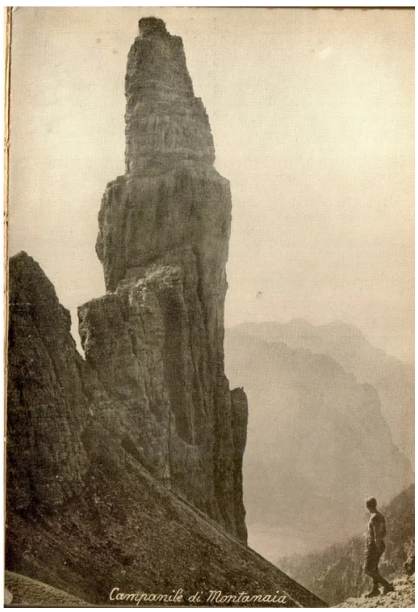
and while Preuss was leading a difficult overhang with no protection for the team, Piaz untied himself and Fries from the rope, writing “because I do not like any connection with crazy people” and that he promised Fries’ mother that he would bring her back safe and sound. Preuss eventually retreated from the pitch, Piaz went up and “applied security” and they continued up the wall, but night fell, and eventually the team had to retreat. They left 70m of rope fixed which was later used by Herzog and Fiechtl for the famous first ascent of the south wall of Schüsselkarspitze later that year, involving pendulums and other rope maneuvers (tk).

Campanile di Val Montania

The Campanile di Val Montanaia in the Carnic pre-Alps (Belluno) overhangs on three sides; it was first climbed in 1902 on the mostly vertical south wall--and descended the same way. Nearly all climbers at the time agreed that the descent was an integral part of any climb, and generally navigated by the same path as the ascent, especially on spires, when there was no easy way down. As Preuss later wrote, the “climbing ability of a climber on the descent must be a deciding factor in the choice of route.” Only short rappels were considered acceptable.

Piaz broke the norm of this tradition, and in July 1906 on the seventh ascent of the Campanile di Val Montanaia, he rigged a wild 38m free-hanging rappel on the overhanging north side, involving swinging into a tiny exposed ledge to the anchors of another 20 m rappel to the ground. It was an outrageous rope maneuver, no one had ever attempted a wild free-hanging rope descent of this length before--most people climbed with only 30m ropes! Even in the gym, a 12m descent on a rope was considered a feat. Instead of needing to reverse the 300m of the ascent route, Piaz’s innovative descent only required 50m of downclimbing from the summit, then two wild rappels, taking a fraction of the time normally required to get down.





Campanile di Val Montania (the left mage first appeared in the 1905 Zeitschrift, inspiring many to climb the spire). The first route initially pioneered by Cozzi climbed the south side. Piaz made his famous 38m rappel--the longest ever at the time--from this bell tower.

PIAZ NELLA DISCESA DEL CAMPANILE DI VAL MONTAGNAIA

U. D. A.

al collo la superba, e, afferrata la corda con piedi e mani, strascinandosi sospeso sulla profonda valle, giunge sulla guglia e le dà un nome: il nome onorato di Edmondo De Amicis. Egli ha compiuto in quel giorno una delle più belle follìe dell'alpinismo.

Non gli basta di essere salito le trecento volte, col sole o colla pioggia, alle torri di Vajolet;

sujet de la cheville, j'ajoute encore que huit jours auparavant, deux guides du pays et un touriste s'en étaient servis dans un sentiment de sécurité parfaite et que deux jours auparavant deux Anglais y avait passé sans incident. Mon compagnon et moi l'avions éprouvée au moyen d'une bonne secousse et avions la conviction qu'elle tenait bien.

La descente à la corde. — On passe la corde dans l'anneau (voir figure 14) en nouant ensemble les deux extrémités. Il est très dangereux de se tenir seulement avec les mains, à cause de la facilité de glissement. Pour une courte descente, il suffit de *freiner avec les pieds*. On entoure le bas de la jambe depuis l'extérieur, on fait passer la corde sous la semelle et on se sert de l'autre pied pour freiner sur la corde. Il faut descendre les mains, l'une après l'autre et non se laisser glisser. Prendre garde de ne pas lâcher les pieds avant d'être arrivé sur le sol.

La descente à la corde. (Rappel de corde)

Figure 15
Descente à la corde avec frein au moyen du pied

Figure 16
Façon de retenir avec les pieds

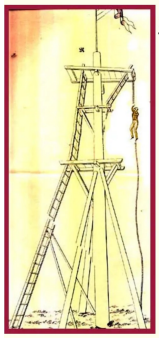
Oss 107. — Totenkirchl, 22 septembre 1907, Jahrbuch, S. A. C., XLIII, 288.

Left: Piaz on the long rappel: Right: the standard method of roped descent well into the 1920's by French and Italian alpinists (image on right from La Conseiller de l'Ascensionniste, Second Volume, 1917).

Piaz showing off his mastery of rope descents--upside down! Certainly, this must be one of the first "over the shoulder" braking system for climbing abseils (images from Paluselli).

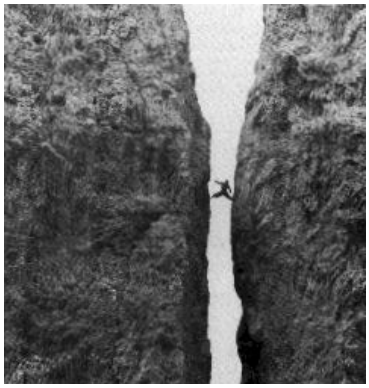
Alpenvereinssektion Bayerland
E. V.
in München
Anwendung des Seiles.
1907.
Kletterschluss.
Sellumwindung an der Aussenseite des Oberschenkels beginnen!
Mit einem Fusse auf den anderen treten! Durch stärkeres Aufdrücken kann völlig gebremst werden.
Kletterschluss behalten, bis der Stand erreicht ist!
Sicherung des Ersten.
des Letzten.

1907 "Application of the Rope" manual from the Bayerland section of the DuÖAV.



Der Einbaum : This massive tower was 40 feet high. The top ladder section on the left could be angled into an overhanging position, like the one on the right. I have added a figure on the rope to show scale. Jahn recommended climbing the 25 foot supporting poles, as well.

Rope climbs in the gym were normally without feet, but instructionals taught a method of security that evolved into the standard mountaineering rappel: "We've climbed high, the hands lose power. Then what? Should we climb down or fall down? Each student must reflect upon that and discover how to wrap the rope around themselves so that they may be held comfortably by it" (Gutsmuth, 1793). At the time, a 12m rope would have been a very long gym rope climb and descent. See also John Gill's histories of competitive rope climbing and bouldering, as it helps inform Piaz's gymnastic background on bars and ropes.



Guglia de Amicis

The same month as the famous rappel, Piaz rigged the first tyrolean to the Guglia de Amicis. A few years prior, in 1902, Antonio Dimai (again with the Baronesses Ilona and Rolanda Eötvös) had “put the rock-climbing world upside down with an act of unparalleled recklessness with a kind of rope bridge to the Torre del Diavolo (in the Cristallo range near Cortina). The details of the strange climb were not well known, nor were they very well understood,” Piaz writes, adding, it “pushed me turbulently to hunt for something similar to Dimai’s witchcraft. I was looking for an inconceivable problem.”

Torre del Diavolo, site of the first tyrolean rope traverse by Dimai. Left: This picture appeared in an article by Ad. Witzenmann in the 1902 Zeitschrift; it was first climbed the next year by Dimai & team. The mountain actually consists of three towers in line, that appear as one in this photo: Torre Leo, Torre del Diavolo, and Il Gobbo. Right: the eventual “ground-up” route, with a wild bridge move first made by Dülfer in 1913 from the Torre Leo (left) to the Torre del Diavolo (right). Dimai’s tyrolean was from Il Gobbo (not shown) to Torre del Diavolo.

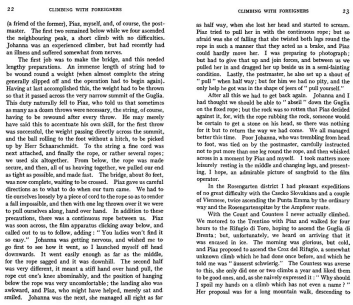
Piaz searched for a suitable challenge, and found it: “As we walked towards the buttresses of the Cristallo, capricious luck smiled on my path in the form of a Dolomite apparition--a spire so untimely slender elegant and daring as to seem more than a needle. I had never seen anything more beautiful in the fateful kingdom of the Dolomites! It was my dream. The creator had placed it there for me!”

Piaz set off for the spire “equipped with an arsenal of cordage of all lengths and thicknesses, ropes, lanyards, and strings of 2-10mm thickness. Also a good amount of perforated lead balls, about the size of a chicken egg. Curious equipment indeed!” For hours Piaz tossed countless lead balls attached to a light cord 20 metres across to the summit of the “rebel tower”, until at last one passed the right spot and over to his

Trenker, Mein Berge, 1935

accomplice below. After pulling a full-strength rope across the gap and fixing it at the base of the tower on the other side, Piaz "passed like a monkey on the barely perceptible air bridge, fearfully suspended over the abyss between the two peaks". The tyrolean required expert rigging skills and successful countering of the high forces a tight tyrolean puts on its anchors[28]. It is still one of the most famous tyroleans in the world, though it garnered the inevitable criticism at the time. Piaz later wrote, *"I never asked for it to be taken seriously, or pretend to deny the comedy of such a system of climbing mountains. For me it was pure manifestation of my gratitude to (the irredentist author) Edmondo De Amicis, whose writing illuminated so many sad hours of my childhood. When on a distance day I am no longer able to climb mountains, I will think fondly on the bright memory of that day, and will be moved again by great joy for having dedicated in the Alps a natural monument to that Great who preached love of country through generosity and goodness of heart."*

GUGLIA DE AMICIS



22 CLIMBING WITH FORESIGHERS

(a friend of the former), Piaz, myself, and, of course, the postmaster. The first two remained below while we four ascended the neighbouring peak, a short climb with no difficulties, Johanna was an experienced climber, but had recently had an illness and suffered somewhat from nerves.

The first job was to make the bridge, and this needed lengthy preparations. An immense length of string had to be wound round a weight (when almost complete the string generally slipped off and the operation had to begin again). Having at last accomplished this, the weight had to be thrown so that it passed across the very narrow summit of the Guglia. This duty naturally fell to Piaz, who told us that sometimes as many as a dozen throws were necessary, the string, of course, having to be rewound after every throw. He may merely have said this to accentuate his own skill, for the first throw was successful, the weight passing directly across the summit, and the ball rolling to the foot without a hitch, to be picked up by Herr Schaerschmidt. To the string a fine cord was next attached, and finally the rope, or rather several ropes; we used six altogether. From below, the rope was made secure, and then, all of us heaving together, we pulled our end as tight as possible, and made fast. The bridge, about 80 feet, was now complete, waiting to be crossed. Piaz gave us careful directions as to what to do when our turn came. We had to tie ourselves loosely by a piece of cord to the rope so as to render a fall impossible, and then with one leg thrown over it we were to pull ourselves along, hand over hand. In addition to these precautions, there was a continuous rope between us. Piaz was soon across, the film apparatus clicking away below, and called out to us to follow, adding: "You ladies won't find it so easy." Johanna was getting nervous, and wished me to go first to see how it went, so I launched myself off head downwards. It went easily enough as far as the middle, for the rope sagged and it was downhill. The second half was very different, it meant a stiff hand over hand pull, the rope cut one's knee abominably, and the position of hanging below the rope was very uncomfortable; the landing also was awkward, and Piaz, who might have helped, merely sat and smiled. Johanna was the next, she managed all right as far

CLIMBING WITH FORESIGHERS 23

as half way, when she lost her head and started to scream. Piaz tried to pull her in with the continuous rope; but so afraid was she of falling that she twisted both legs round the rope in such a manner that they acted as a brake, and Piaz could hardly move her. I was preparing to photograph; but had to give that up and join forces, and between us we pulled her in and dragged her up beside us in a semi-fainting condition. Lastly, the postmaster, he also set up a shout of "pull" when half way; but for him we had no pity, and the only help he got was in the shape of jeers of "pull yourself."

After all this we had to get back again. Johanna and I had thought we should be able to "abseil" down the Guglia on the fixed rope; but the rock was so rotten that Piaz decided against it, for, with the rope rubbing the rock, someone would be certain to get a stone on his head, so there was nothing for it but to return the way we had come. We all managed better this time. Poor Johanna, who was trembling from head to feet, was tied on by the postmaster, carefully instructed not to put more than one leg round the rope, and then whisked across in a moment by Piaz and myself. I took matters more leisurely resting in the middle and changing legs, and presently, I hope, an admirable picture of sangfroid to the film operator.

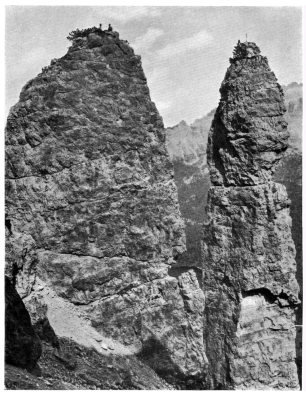
In the Rosengarten district I had pleasant expeditions of no great difficulty with the Cercle Slovakians and a couple of Viennese, twice ascending the Punta Emma by the ordinary way and the Rosengartenspitze by the Ampferer route.

With the Count and Countess I never actually climbed. We motored to the Tretten with Piaz and walked for four hours to the Rifugio di Tren, hoping to ascend the Guglia di Brenta; but, unfortunately, we heard on arriving that it was encased in ice. The morning was glorious, but cold, and Piaz proposed to ascend the Cost del Rifugio, a somewhat unknown climb which he had done once before, and which he told me was "dassent schwierig." The Countess was averse to this, she only did one or two climbs a year and liked them to be good ones, and, as she naively expressed it: "Why should I spoil my hand; on a climb which has not even a name?" Her proposal was for a long mountain walk, descending to

Lilian Bray's 1926 report of climbing with Piaz in the Pinnacle Club Journal.

Piaz was having fun innovating new ways of doing things, and he wasn't bothered by other's opinions as he tried new tools and techniques that were soon to become standard ways and means of a much wider array of mountaineering endeavors.

In the next part--Tita Piaz, partC---we will look at some of Piaz's early guiding seasons full of first ascents of wild spires, more of his known use of hardware and ropes to equip routes for safe belays and descents, and how his experience and expertise led to the first ascent of west wall of the Totenkirchl in 1908, a breakthrough first big wall ascent in the Wilder Kaiser in North Tirol. Super fun to write about Piaz's climbing--all the favourite climbing activities of my generation--soloing (sometimes onsight but mostly training routes), fast climbing, first one-day ascents, hard and bold free, having fun swinging around with ropes and gear, and eventually, the big walls--Piaz gave them all their initial pizaaz!



LA GUGLIA EDMONDO DE AMICIS

Left: Guglia de Amicis (Swiss Alpine Club 1926 journal). Right: the tyrolean--note the two ropes used (La Lettura, 1908).

[28] Piaz's demonstration of complex rigging and anchoring on the Guglia de Amicis expanded the state-of-the-art "ropecraft" at the time, though in industrial endeavors, rigging and high angle work had also been advancing at the time. On ropes: even the best long fibre Italian hemp ropes at the time had a breaking strength between 7.5kN and 10kN (compare with modern ropes at least double that). It appears that rope manufacturers who supplied ropes to climbers began integrating dynamic properties in the rope design certainly by the mid-1920's, and possibly before. 10mm rope weighs about 85g/m, so 150m of 10mm rope would weigh almost 13kg (28 pounds). An early mountain rope article in the: (1926 Rivista Mensile del CAI).

Dr. Inglis Clark, photo. Swan Electric Engraving Co., Ltd.

THE VALOJET PEAKS, AT SUNRISE.

1916 Alpine Journal

The three most famous Dolomite spires in Piaz's time: left: Campanile di Montania. Middle: Guglia de Amicis (photos from Piaz's biography).Right: Torri del Vajolet. Piaz climbed Guglia de Amicis on July 7, 1906, a few weeks before his famous long rappel descent from Campanile di Montanaia (July 28, 1906). Piaz later guided Edmondo de Amicis' son Ugo on the route.

Two of Piaz's five kids. Left: Piaz's daughter Olga (b.1903) who climbed on Piaz's back to the summit of the Vajolet Towers, aged 5, and whom Piaz named a spire after. Piaz named Punta Pia after his second daughter and writes about climbs with Carmela in his book. Piaz named many spires after those he loved. Right: Piaz climbing with his son Furio (b.1920 with his second wife Maria Bernard).

Piaz's home for much of the year. In 1903 Piaz married Marietta Rizzi, the daughter of Antonio Rizzi di Pera (known as Tònele), the manager of the Rifugio Vajolet; they had three children Olga(1903), Pia (1904), and Carmela (1906). Climbing everywhere.

Tita Piaz-Guide and Rigging Expert (Piaz PartC)

Here in Tita Piaz, PartC, we will examine Piaz's use of technology for his climbs, up to his 1908 breakthrough ascent on the west wall of the Totenkirchl in the Wilder Kaiser range.

FRAU KATHE BRÖSKE
LA GUGLIA EDMONDO DE AMICIS

e sfasciarsi sotto lo schianto delle folgori.

Sono cittadelle smantellate, merlature dirute, minareti screpolati, tronchi di obelischi infranti, profili corrosi di sfingi, fusti solitari di colonne colossali, dieci volte più alte di quelle di Tebe, che reggono ancora il loro capitello di loto, sole superstiti del grande tempio crollato.

Dalle torricelle fantastiche del gruppo di Brenta, caro a' miei amici Trentini, fino ai dossi immani del Sasso Lungo che prospettano l'alto Adige, è tutta una architettura di sogno.

La Guglia Edmondo de Amicis, from Guido Rey, Alpinism Acrobatico. The left spire is called Campanile Misurina has an easy route to its summit and is where the tyrollean begins.

Tita Piaz and Ugo de Amicis

After dedicating Guglia de Amicis to his favourite irredentist author, Piaz sent photos of the spire to Ugo de Amicis, Edmondo's son, who had been actively climbing in the Western Alps. Ugo immediately got in touch with Piaz and made plans for the wild rope ride across to the summit of Guglia de Amicis for the 1907 guiding season. Ugo knew of Piaz's reputation as *"one of the most daring and victorious climber who break their fingernails and turn their muscles to iron on the demonic and sublime Dolomite mountains,"* and when they met in Trento, they quickly bonded in warm friendship with their mutual love of climbing, and began exploring[29].

Tita con Ugo De Amicis

VERZI e DIMAI con UGO DE AMICIS

Ugo de Amicis climbed with many of the top guides, including many routes with Guido Rey: the Matterhorn, Petit Dru, Aiguille du Grépon, and several more of the hardest rock climbing routes in the Western Alps at the time. His first climbs in the Eastern Alps were with Tita Piaz. He was the son of the irredentist author, Edmondo de Amicis, who Piaz had named the spire Guglia de Edmondo de Amicis (the spire's full name), first ascent by tyrollean traverse (at the time, referred to simply as a "rope bridge" of "rope traverse").

Piaz and Ugo started their tour on the Campanile di Val Montania. *"Until now, no one else had dared to descend the longest abseiling point in the Alps,"* Ugo writes, *"you let yourself down over an overhang of 40 meters into the void, a few metres away from the wall, slowly spinning while the mountains circle around. Your fingers have to be as secure as your head."* They then tried a new rope traverse between two peaks in the

[29] *Quotes from Ugo de Amicis, la Lettura 1908--reprinted in SAC, 1926.*

Valle di Toro, but after six hours of throwing of lead balls connected by a thin cord unsuccessfully over the summit, they surrendered, and headed for the main event.

When they arrived at the Guglia de Amicis, the white and red flag Piaz had left on the summit the year before was still waving on the summit; Ugo considered the sight of it a *"greeting and a good wish"*. They climbed the neighboring Campanile Misurina, and this time Piaz made the lead-ball throw across the 20m gap first try, and the climbing rope was soon pulled over the summit and anchored on the other side.

"Now it was our turn," Ugo writes, full of doubt and fear, "who knows if the carrier, who we barely knew, had fastened the rope well (at the base of the tower)"; *"I think the rope is too elastic, very thin"*; and *"what if I can no longer move forward or backward in the middle of this rope and remain there forever, like a fly caught in a spider's web?"* Meanwhile, Piaz quickly monkeys across: *"he swings his legs over the rope and he walks away quickly by air with his head down and legs turned toward me. The second half of the traverse goes almost straight up, Piaz does this quickly, then upright and triumphant on the high pedestal… Piaz calls for me to come. Oh, innovators of alpinism, in what forbidden places we dare to raise our anarchic banner!"*

Ugo makes it across, and there they plan another audacious feat--the first rappel off the summit of Guglia de Amicis. Ugo continues:

"Piaz goes back to Campanile Misurina on the horizontal rope to fetch the ropes and the irons necessary for the descent. In the middle of the rope he rocks in the void like in a hammock, letting go of one leg and one arm, and calmly looks in all directions. Piaz sends me the extensive and important tools and provisions in his backpack by means of the rope, then he too comes back, aping the monkeys, and pulls in the rope that connected the two tips, because it was needed for the difficult descent. Now we are completely isolated from the rest of the world and have cut our way back. What if the descent were impossible now? I can already see myself up there with Piaz, imagining the pillar saints of mountaineering for our whole life."

Only a wild climber like Piaz would have pulled the ropes and committed to this degree of dependence on equipment--ropes and anchoring technology--at the time. Piaz "*drives in the first ring of rope on the tip, pulls the double rope through, puts the hammer and iron in his pocket then descends about 10m."* With tension from Ugo, Piaz then drills a piton/bolt with hammer and chisel on the edge. Ugo *"hears Piaz talking to himself and then chiseling for a long time, and since I know that that the iron is supposed to hold our holy persons (how holy is man in such places), I hope he chisels a lot and thoroughly."*

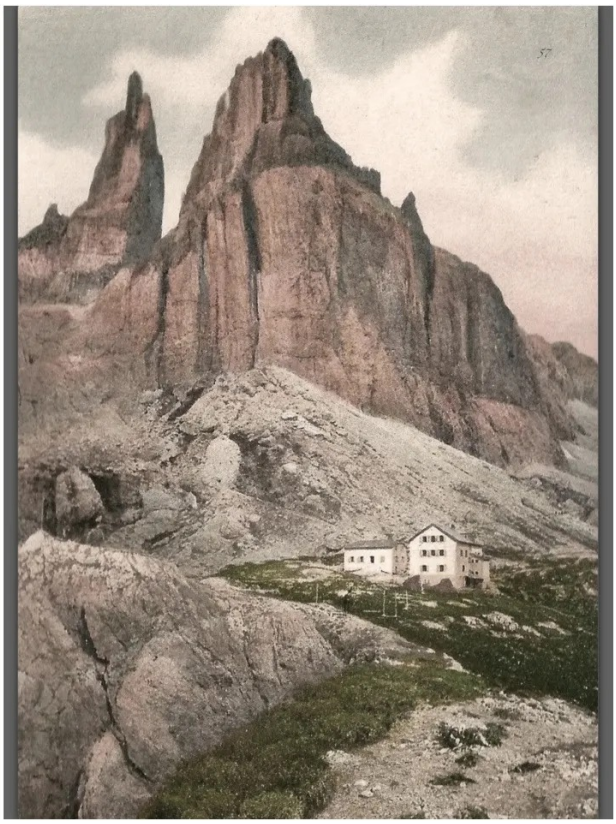
With the anchor in place, Piaz sends Ugo down the overhanging rappel first with orders to pull into a tiny stance 20m down. While Ugo is trying to figure out how to brace himself safely on the tiny exposed stance, Piaz quickly joins him, then the rope gets stuck and had to be abandoned. They set up the second rappel with their last rope, and again Piaz lowers Ugo to another tiny stance on the side of the slender spire. Ugo suggests setting up the last rappel over a natural limestone flake, as was often done in the Western Alps on granite, but Piaz replies laconically: *'I want to live a few more days. Don't you?'* then hammers in "the third iron." Piaz and Ugo finally make it down, after an epic of multiple stuck ropes, barrages of rockfall, and a final airy rappel to the base.

Ugo finishes: *“It took us six hours to traverse this eighty-meter peak. As we are on the way back, we turn around to admire the bold obelisk, and if we didn't see the rope hanging up there that we had to leave behind, we would doubt ourselves whether we made the descent. The weather, in paternal kindness, wants to give us a light punishment for our madness, and under a violent thunderstorm we take refuge in the hotel.”*

In contrast to the relatively safe descents down previously ascended territory which was the norm in mountaineering at the time, descending into the unknown with the proper tools, as Piaz and Ugo’s descent from the Guglia de Amicis, becomes a key (and obvious) strategy of future climbs in the wild Alps. Even with modern equipment, six hours is still a pretty good time to rig a tyrolean and set up a descent route down a three-pitch spire. In the following years, Piaz climbed many more routes with Ugo, often with Guido Rey, including a classic Dolomite Tower-Face-Chimney tour offered by Piaz (Vajolet Tower-South Wall of Marmolada-Tschierspitze). Piaz was as adventurous on climbing objectives with clients as he was with his friends and climbing partners.

Guido Rey writes in 1914, reinforcing the prolific talent and adventurous spirit of Piaz: *“Not satisfied with having ascended the Towers of Vajolet three hundred times, in ‘sunshine or in rain’, he wished to attempt them by night under the stars; therefore he persuaded an American lady to join him, and soon, in the heart of a beautiful summer night, his lantern could be seen shining, a newly created star, on the topmost pinnacle.”*

Guido Rey con Piaz sulla Torre Stabeler
(neg. U. De Amicis)



“Sack of Flour” guiding technique
There are many funny stories of Tita Piaz’s guiding hard climbs in his biography, “Half a Century of Alpinism” and in the early journals. Piaz often took clients on climbs well above their ability; even the talented climber Western Alps climber Guido Rey experiences this with Piaz on a difficult section on the Vajolet Towers:

“With a quick movement, Piaz climbs and disappears. Immediately I am ordered to follow, as obedient as a schoolboy, I imitated as best I could the movements I had seen, then came a fierce struggle between me and the rock, groping here and there with hands and feet. Half suffocated, I begged for advice, and I do not remember if it was thanks to Piaz’s advice or to the rope, I soon found myself face to face with Piaz--it was then that I really learnt to know Tita.”

Mountain guides at the time refer to the required assistance of the rope as the “sack of flour” technique (“Mehl-Sacktechnik”); essentially early rope friction-braking techniques that eventually evolve into standard belay methods. If the terrain was too steep to downclimb, getting a client down generally involved lowering them with the rope tied around their waist. Without harnesses or free-hanging abseil skills, there are many tales of imagined suffocation while hanging suspended on the stiff ropes of the day.

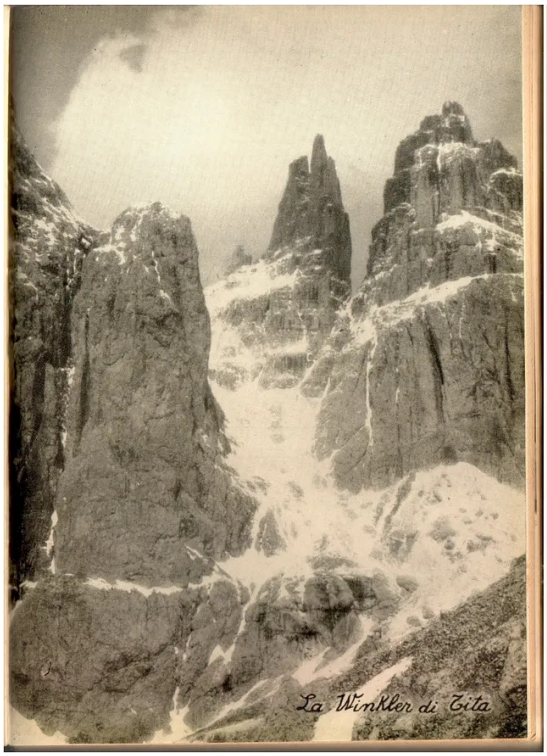
In his chapter, “Conversion of an Enemy”, Piaz relates a funny story of a man, loudly critical of “Piaz”, at a Bavarian alpine hut. The man knew Piaz only by reputation and was unaware that Piaz was standing nearby; without disclosing who he was, Piaz invites the man to climb with him the next day on a difficult overhanging training climb, and recounts:

“After a magnificent tumble, he remains hanging in the air, desperately making

Piaz with Fassa Valley guides (Storia dell’Alpinism Fassano, 1924)

movements that gave Galileo the idea for the pendulum. In vain he clings to the rock. ‘Hold, hold, I can’t take it anymore, I suffocate!’” A climber below yells ‘Pull, Tita pull!’ And Tita pulls, pulls like three oxen, then four oxen.” Eventually, the climber makes it over the overhang; with a dazed look, the man finally realizes he is climbing with Tita Piaz, who continues: “I smile to him with my best smile, and say to him, ‘Courage, friend, that life is beautiful and still continues today! He did not respond to my rather evil smile but stretched out his hand and said to me, his eyes shining with tears: ‘Tita, do you forgive me?’ And we were friends.”

Today, we call this a “sandbag.” Another example comes from a 1911 Swiss Alpine Journal article, “Eight Days in the Dolomites.” The author witnesses a client struggling up the Delago route on the Vajolet Towers, with Piaz literally *“pulling the old man up it--hey, ho, hey--just as you raise a*

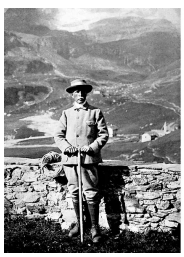


bale of cotton in the air." Piaz once caught a 30m swinging fall of one of his clients—the man either fell asleep or fainted at the beginning of a difficult traverse—Piaz recounts how he was able to catch the fall, and despite losing the skin on his hands, *"which in truth is not much, in comparison to (the man's) life."*

For Piaz's climbing adventures, secure anchors were essential. On the crux of the Winkler route on the Vajolet Towers, Piaz writes of a client asking for tension, whereupon the rope goes slack:

"'Help! I'm untied! Help!' In a flash I fixed the rope to a nail, … I slipped down and found him perfectly untied, barely holding onto the problematic hold with his head dangling in the void… a few seconds separated him from the end. To tie someone up in such a situation, you would need at least three hands, and I from my birth had only two. Yet I tied him up, it still remains a mystery to me. Sometimes far-fetched inexplicable things happen in life, which the believer calls miracles"."

Piaz equipped routes with piton anchors to enable such miracles; for Piaz it was common-sense rigging to enable the new kind of bold free climbing--the Acrobatico Alpinismo--that was characteristic of the new climbing style in the Dolomites that climbers were coming from far and wide to experience, with Piaz, known to be safe and strong, was the top choice of guides, and a leading expert on rock climbing safety anchors.



"Piaz is a creature of the Dolomites. A tireless instinct obliges him to return continuously to the savage, forbidding rocks which harmonize with his proud spirit...ever seeking after noble things."

--Guido Rey, Alpinismo Acrobatico, 1914

Spire Specialist
Piaz climbed many first ascents of spires with clients, equipping them—'hooking the wall'—and making them safe for guided ascents and descents. From the DuÖAV:

The direct ascent from the Vajolet hut over the southeast face (of the East Tower) has been tried several times, but always without success. The whole tour can be described as extremely interesting due to its variety in technical requirements and its alpine charms. At the suggestion and guidance of G.B. Piaz, the qualified engineer E. Kronstein-Wien and district judge Müller-Munich on August 22, 1907 climbed the southeast face. The lowest steep step is crisscrossed by a noticeably deep, black chimney, which was only made possible by the outstanding skill and bravura of Piaz and his patience in ***hooking the wall****. In particular, where a drooping block makes it necessary to exit the chimney and climb an almost handleless wall in complete exposure, the difficulty and danger are combined to such an extent that the route can be used as training for other excellent tours.*[30]

Starting in the fall, 1905 guiding season, Piaz began an incredible year of first ascents with Bernard Trier, a wealthy German industrialist and talented climber. In a single day they climbed three new spires in the Carnic region (the same area as Campanile di Val Montanaia in the Eastern Alps). When Piaz was guiding in the area, he hired the barefoot carrier Teresa, for whom Piaz named the descent notch Forcella Teresa. Piaz writes of Teresa:

"A very nice girl, who carried phenomenal weights, capital importance given the absolute lack of shelters in that area. Women carriers are a local custom. Since I was never fond of the term 'carrier', she would come with us to the climb with food, rope, nails, the 'tools of the trade', as Preuss would say."

Piaz climbed over a dozen first ascents of spires with Trier that year (including the Montanaia di Val Montanaia and Guglia de Amicis already described), cumulating with a spectacular climb of the NE wall of Campanile Toro, a fearsome spire and likely the hardest rock climb in the Alps in 1906. "It was the most impressive climb of my life as a mountaineer, perhaps more because of the specific conditions and circumstances," Piaz writes, "which I worked the first ascent with artificial means." Subsequent ascents will always be easier once the route is equipped with anchors, and sure enough, it was soon "downrated" in the 1907 DuÖAV by Neiberl, one of North Tyrol's leading climbers, who *"evaluated the crooked crack (the crux) a little less high."*[31]

There are many epic stories of Piaz's routes, many legends, not only of the original ascents, but also of the subsequent climbs and failed attempts. In addition to longest rappels, Piaz experienced one of the longest lead falls (that was survived) on the ropes and gear of the time. It was a slip while

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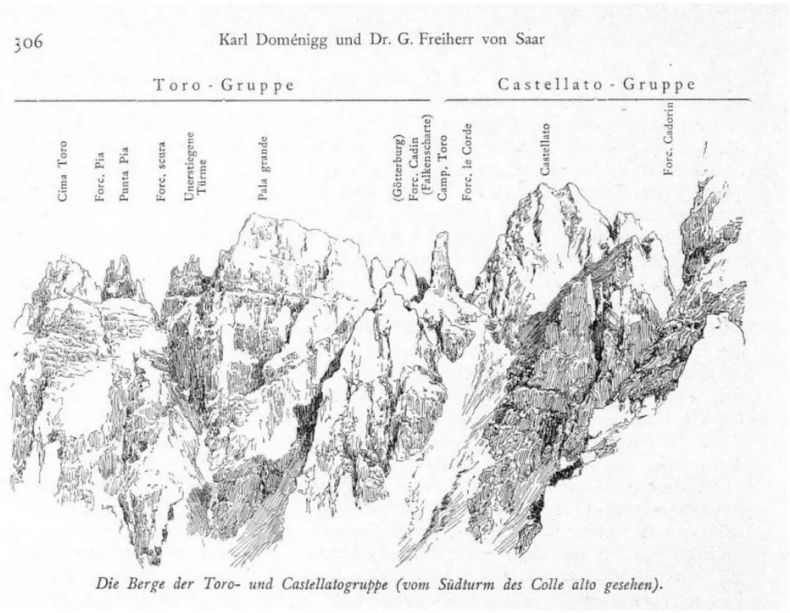
[30] footnote: it was probably the first ascent of the southwest face of this tower in 1906 with George Christophe from Berlin that got Piaz in trouble with the Fassa guides, as he was still officially only a 'carrier' at the time. He was also bootleg guiding the south wall of Marmolada around this time.

[31]The second ascentionist writes: "There will be few places that are so dizzying like the cutting edge of the Campanile Toro." The route diagonals up the steepening spire, so any falls generally end up in space. Piaz notes a subsequent ascent made 25 years later by the famous Schmid bothers from Munich (first ascent of North Face of Matterhorn, first climbing gold medalists), who confirmed its "5th degree" difficulty. Rudatis, in a 1930's history piece, notes that the brothers "overcame it with a purity of style, doing it without nails.

Monte Castellato und Campanile Toro.



Die Berge der Toro- und Castellatogruppe (vom Südturm des Colle alto gesehen).

Campanile Toro, one of Piaz's harder first ascents, involved "Artificial means." In this context, Piaz might be referring to pitons used mid-pitch as free-climbing protection. In his writings he emphasizes the use of pitons legitimate to make things safe, but not for upward progress.

guiding George Christophe on the south wall of Marmolada in 1907, exiting a chimney, *"over a void of a hundred meters … at one point I flew and fell perpendicularly into the void for about ten meters, until a strong tightening of the rope around the ribs told me that my life would continue as before."* He was luckily caught by his "life-saving partner" and subsequently had nightmares about the fall and its potential consequences for himself and his client, and swore to himself that he would never again fall again, and apparently he never did.

Here, we have focused primarily on Piaz's relationship with technology to establish greater clarity of Piaz's mastery of ropes and pitons to enable harder and longer climbs. Piaz was joining the ranks of an elite group of guides—Dimai, Rizzi, Bettega, Siorpaes, Verzi—guides known all over Europe, and using his skills and climbing talent, he was soon to set a new standard in big wall climbing in North Tyrol.

Further reading:
Piaz's attitude toward the acceptable use of pitons and his attitudes toward risk become more clear reading his recollections, as well as his published statements during the famous "Piton Dispute" of 1911-1913. In a nutshell, Piaz felt life was more important than bravado, and he deeply lamented Preuss's death, as well as many "double falls" (when a falling leader also rips the belayer to their death). A well-translated and illustrated version by Randolph Burks appears on the internet.

NEXT: Tita Piaz, PartD: First ascent of the west wall of the Totenkirchl, 1908.

Dr. Georg Leuchs

"The difference between Piaz, Nieberl, and Preuss seems to lie only in the fact that Piaz will permit perhaps 30, Nieberl perhaps three, but Preuss no pitons at all."

--Georg Leuchs, pioneer of the Kaisergebirge. As quoted by Hans Dülfer, 1912 Mitteilungen des Deutschen und Österreichischen Alpenvereins.

Tita Piaz, PartD--Big Wall Climber

Background: Often histories credit Hans Dülfer (1892-1915) for the first rope maneuvering and descent techniques, most notably the evolution from his methods now known as the "Dülfersitz", the standard way of rappelling even in my early days of climbing (1970's). But it's clear that Piaz was an earlier originator of high angle rope gymnastics, combining bold free climbing and rope systems to fly across and up elevated slabs of rock. The Piazwand on the Totenkirchl, first climbed in 1908 and later rope-soloed in 1911 by Preuss, was the first route up a major unclimbed wall that really put all the new techniques into place, creating a new visibility about what was possible on the largest rock walls on Earth.

Totenkirchl--the dream

In 1924, Franz Nieberl, climber and stellar chronicler of climbing techniques, recounted a dream he had in the Kaisergebirge twelve years prior, at the base of the Totenkirchl, prior to Hans Dülfer's breakthrough ascent of the direct west wall. In his dream, the spirit of the Totenkirchl came to life and told its story, how it first formed in a primeval sea, then born to the world as a giant limestone tower with steep walls on all sides, where it was "enthroned, secluded and undisturbed" for eons. Then, the "little human beings" arrived and began sneaking around its base, then climbing its faces with wall hooks and complete "locksmith's shops" in their pockets (most gear was carried in jacket pockets back then, rather than on slings with carabiners). For a while, only three of its four mighty walls were climbed, and the spirit of Totenkirchl was confident that its west wall, "the one as if made from one piece", was its trump card, safe from the "tiny tough tormentors". But

The Totenkirchl West Wall, one of the birthplaces of modern big wall climbing. Once considered impossible, the first climbs up the 600m west wall required the vision of two climbers on two different routes by Tita Piaz (1908) and Hans Dülfer (1913), to see the potential for visionary lines that became templates for all future climbs up the largest big walls on Earth (photo: Trenker, 1963).

then a "skinny human child" arrives with a giant snake of Manila hemp braid, and with piton on piton perilously descends the west wall's overhangs and chasms. With its face defiled, the "carefully fooled" wall was soon ascended and removed from the list of impossible climbs. The spirit concludes, "Now I was worn out. The old song rang out again: this is the hardest Kaiser tower!"

The Totenkirchl is a striking stone monolith in the Kaisergebirge, a low alp (~2500m) region about 100 kilometers south of

Mitteilungen
des Deutschen und Oesterreichischen Alpenvereins.

Ein Traum am Totenkirchl

Left: "A Dream at the Totenkirchl", one of many great climbing stories by Franz Nieberl, known as the "pope of the Kaisergebirge". Nieberl also authored "Das Klettern im Fels", first published in 1909 and updated regularly for decades, one of the best climbing gear and technique instructionals of the era. Right: an early postcard with the classic lines and variants of the Piaz and the Dülfer routes.

Münich, and one of three major mountain ranges (along with the Wetterstein and Karwendel ranges) that comprise a long east to west chain of limestone and dolomite peaks as the centerpieces of North Tyrol. The word Totenkirchl translates to "Church of the Dead", named after small churches in Eastern Orthodox Christian areas that sometimes house mummified bodies, and from a distance it is an imposing feature on the landscape. Even though the Eastern Alps ranges were primarily within Austria-Hungary at the time, the northern climbing ranges were considered the domain of the German-speaking "Münich School" climbers, notably Kaiser guidebook author Georg Leuchs and others, and the southern Tyrol climbers rarely visited. Tita Piaz was an exception.

West Wall of the Totenkirchl, 1908

The west wall of Totenkirchl was for many years, "the last great problem" of the Eastern Alps, and several top climbers had attempted forays up the wall in search of a climbable route. Pitons were just starting to become mainstream tools, still only custom made in small blacksmith shops, and in their infancy mostly used as a point of direct aid or as belay/rappel anchor. The concept of difficult free climbing above a piton, tempting a longer shock load fall, was still highly feared, and Piaz was well-known as *the* boldest in this art. With his extensive experience of rigging ropes safely for Tyroleans and rappels, maneuvering to gain features both while ascending and descending the complex spires of the Dolomites, he was ready to lead the first of many big wall breakthroughs in the Alps, now made possible with stronger and lighter rope and piton systems.

Many great climbing adventures begin on motorcycles, and Tita's epic 300km trip from Perra to Kufstein was one of the first on new roadways connecting the Tyrol regions, and with one of the first factory-produced touring motorcycles, which only appeared around 1901. He motored up to the North Tyrol with Franz Schroffenegger, a Tiers mountain guide of repute, and there they joined the rest of the team with the objective of climbing the first ascent of the west wall of the Totenkirchl.

Piaz writes of his 1908 trip to the Kaiser: "The trip was quite eventful, like many of my motorcycle trips. However, it cost the life of a dog, two hens, and we were almost

Piaz and one of his motorcycles, an early Moto-Guzzi from the 1930s.

Zeitschrift des D. u. Ö. A.-V. 1917
Naturaufnahme von Dr. L. L. Kleintjes
Mezzotinto Bruckmann
Totenkirchl aus dem Kaisertal
Zeitschrift des D. u. Ö. A.-V. 1917
Naturaufnahme von Albert Stoß
Bruckmann aut. et impr.
Westwand des Totenkirchls

The Totenkirchl is in the Wilder Kaiser (Wk on map previous pages), one of the two main sub-ranges of the Kaisergebirge.

whipped by farmers in Jenback" after an incident with a cabbage cart pulled by two oxen.

A meeting of north and south Tyrol tribes, the other two members of the team were Josef Klammer, an experienced alpinist and founder of the first mountain rescue team from Kufstein, and Rudolf Scheitzold from Munich, who had made a committing abseil descent of the wall from its second terrace the year before (referenced in Nieberl's dream). Although Schietzold's inspection of the route revealed a few secrets about the possibility of a climbing route up the west wall, he initially reported it "impossible" and warned against any attempt. Piaz was soon introduced to the community, including the president of the DÖAV section, Anton Karg by Franz Nieberl, who joked (according to Piaz), "Mr. President, what to you think of these very modern guides, who travel 300km on a motorbike to try the biggest problem of the Eastern Alps? You can rest assured that Piaz will teach Latin to our Kaiser climbers." Soon the team began their 16km trek from Kufsein to Hinterbärenbad, where the Totenkirchl dominates the view.

One of the key skills Piaz brought to the table, based on his extensive first ascent experience in the southern ranges, was his eye for a line, knowing the limits of possibility with the equipment gathered for the ascent. Piaz writes, "At a glance I was surprised the (west wall of the Totenkirchl)

had not yet been won, and I did not even have a flash of doubt that the attempt would not be in vain." Exploring the wall with binoculars, he immediately saw the precise line, and writes of his explanation, "Do you see the little wall on the right, with a crack barely noticeable on the left? Well, I tell you we will pass by there, and I promise, if we do not, then I will become a barefoot friar." And sure enough, the line that Piaz had envisioned from below had been the climbable line of weakness, a discovery unknown to all previous attempts. The key free-climbing pitch that Piaz had scoped was soon named the Parete Piaz and immediately became legend in the climbing world as a feared run-out crux, about 5.7 or 5.8 (in German, the 'Piaz-Wandl').

The "Rope Crossing"

The route was not entirely free. A shoulder stand was rumoured, and the route was reported as having, "many pitons, mostly only used for security purposes." One of the keys to the route was a roped tension traverse. The Piaz team described this pitch as "30m long traverse up and left, then falling sharply downwards (wall hook) left into the chimney". Though Piaz himself preferred to focus more on the free-climbing difficulty of the "Parete Piaz" in his recounting of the climb, Fritz Schmitt describes the section as a "delicate point with twice diagonal abseiling, jammed ropes were extremely malicious, a few steps on a smooth wall, and I was safe in the chimney. But what does it mean to be secure in a 120m chimney with all kinds of overhangs, chockstones, and smooth cracks?" (1934 SAC). Subsequent reports of rope tension techniques on other routes during this period are often similarily awkwardly described, and it is not until the late 1920s that this technique, of using the rope and anchor system to move laterally on a wall, becomes universally identified as the "Seilquergang" ('rope traverse' or 'rope crossing') technique.

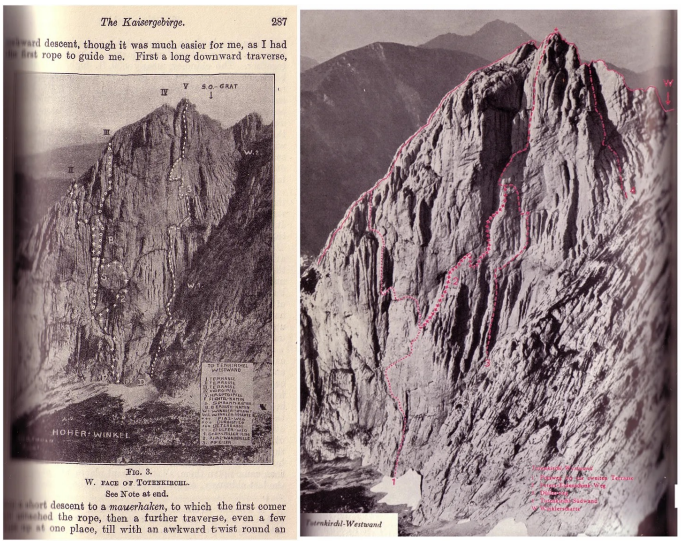
The West Wall of Totenkirchl team after their ascent. Franz Schroffenegger (L) and Tita Piaz (center), standing: Rudolf Scheitzold and Josef Kammer. After this photo was taken, Klammer gave a lecture on the ascent for the Bayernland section in Munich, with Piaz "dragged to the podium under penalty of lynching" to "expose the smallest details of the heroic enterprise: the world had to know how many times we yawned or felt the need to pee!" Piaz writes, "The hall of the Hofbräuhaus had never been as crowded as that evening."

Despite the warnings by the first ascensionists that "repetitions are not recommended for this route" due to its difficulty and danger, the west wall of the Totenkirchl quickly became a sought-after technical and mostly-free big wall route, with over 30 successful ascents in the following five years, as well as many attempts and even a fatal accident (Leuchs, 1917). Despite technically harder and longer routes established in this period, the PiazWand, as

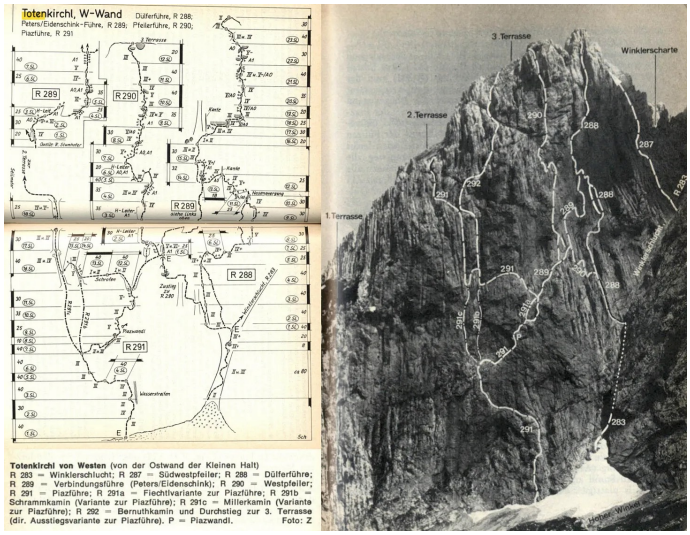
the route became to be known, reigned supreme in the literature as the testpiece wall, until the advent of Dülfer's more direct route up the west wall of the Totenkirchl in 1913, which established yet another new yardstick of visionary lines. In Piaz's telling of his adventurous climb, he concludes, "Four years later (actually 5), the great Dulfer, in the company of his friend redwiz (sic), corrected the wall with his memorable direct."

The 1908 traverse on the Totenkirchl is the first example of a rope tension-traverse being a key to a significant big wall breakthrough. The dependence of the rope with a distant anchor, hanging and swinging around on airy rock walls can be daunting even for modern experienced climbers. As more optimal natural-fibre climbing rope knowledge improved among climbers in the first decade of the 20th century (see ropes article), the idea of using the rope and anchor systems as a way to maneuver laterally on big walls to connect natural features shifted from the fear of a death sentence with fragile ropes and insecure anchors, to a mainstream climbing technique even in exposed and overhanging climbing situations. Over the next decades, the technique evolved and was used on many alpine and big wall breakthroughs on even the most fearsome high alpine walls in the Western Alps, including the first ascent of the North Face of the Matterhorn by the brothers Franz and Toni Schmid in 1931.[32]

Other climbers at the time were also starting to experiment with tension traverses, mostly on smaller crags, and prior to Dülfer's short-lived technique of bringing a completely separate rope for self-belayed tension traverses, employed on his 1912 ascent of


The Kaisergebirge. 287
ward descent, though it was much easier for me, as I had
rope to guide me. First a long downward traverse,
V S.O.-GRAT
HOHER-WINKEL
Fig. 3.
W. FACE OF TOTENKIRCHL.
See Note at end.
descent to a mauerhaken, to which the first comer
the rope, then a further traverse, even a few
one place, till with an awkward twist round an
Totenkirchl-Westwand

The Piaz route on the Totenkirchl takes the left line to the summit ridge. Climbing a wall like the Totenkirchl west face in 1908 was still unimaginable. Piaz showed it was possible and the breakthrough directly led to the next generation of big wall alpinists and more direct lines up the massive walls of the Alps. (L: Alpine Journal, 1925, R: Fritz Schmitt, 1942)


Totenkirchl, W-Wand
Dülferführe, R 288;
Peters/Eidenschink-Führe, R 289; Pfeilerführe, R 290;
Piazführe, R 291
R 289
R 290
R 288
R 291
Totenkirchl von Westen (von der Ostwand der Kleinen Halt)
R 283 = Winklerschlucht; R 287 = Südwestpfeiler; R 288 = Dülferführe;
R 289 = Verbindungsführe (Peters/Eidenschink); R 290 = Westpfeiler;
R 291 = Piazführe; R 291a = Fiechtlvariante zur Piazführe; R 291b =
Schrammkamin (Variante zur Piazführe); R 291c = Millerkamin (Variante
zur Piazführe); R 292 = Bernuthkamin und Durchstieg zur 3. Terrasse
(dir. Ausstiegsvariante zur Piazführe). P = Piazwandl. Foto: Z
3 Terrasse
Winklerscharte
2 Terrasse
1 Terrasse
290
288
287
292
291
286
289
283

1978 DAV Guide

[32] Footnotes: The 1908 route on the Totenkirchl only got a brief mention in the 1910 DuÖAV journal, but a full route description appears in the XIII Jahresbericht for 1908, Alpenverein Sektion Bayerland (1909). Although the rope traverse section was later free climbed without rope tension (possibly by Paul Preuss in 1911), many still depended on tension with the rope for the traverse into the exit chimneys even into the 1970s (see 1978 DAV topo).

the east wall of the Fleischbank, ever more difficult tension traverses were established on new routes, notably by Angelo Dibona on the Laliderer in 1911 and Georg Sixt on their climbs. Hans Fiechtl and Otto Herzog famously introduced the carabiner to the technique on the Schüsselkarspitze in 1913. Beginning in the 1920s, the Seilquergang was illustrated and described in many journals. Karl Prusik wrote a book on techniques in 1929 and considered it one of six basic techniques that should be formally taught to every beginner climber (along with knots, belaying, rappelling, hauling a pack, and creating an anchor with pitons). The evolution of gear and techniques in pre-WWI years will continue in more detail in this series, setting up for the explosion of harder big wall routes in the 1920s and 1930s in the Eastern Alps and eventually throughout the world.

LO SCARPONE

Manovre di corda

Traversata di corda alla Dülfer per capocordata e corda a passamano.

In altra parte del giornale, e precisamente dove si parla delle ascensioni nel Kaisergebirge è fatto cenno alla tecnica di traversata trovata da Hans Dülfer, che permette di superare delle brevi traversate, che sarebbero di impossibile effettuazione in altro modo.

Dal manualetto del Merlet sull' «Uso della Corda» (1) ricaviamo quanto può interessare i nostri rocciatori su tali manovre.

Il rocciatore deve anzitutto portare una corda di riserva, possibilmente più leggera e scorrevole (corda a treccia).

Arrivato al punto della traversata sale un poco, pianta un chiodo, infila il moschettone ed in esso fa passare il cor-

Traversata di corda

dino, esattamente come per calata a corda doppia, facendolo passare attorno alla coscia ed alla spalla opposta (alzando il bavero) (vedi schizzo).

«Se la traversata va eseguita verso sinistra, fa corda è passata intorno alla coscia sinistra, davanti al petto ed alla spalla destra. Viceversa, se la traversata va verso destra».

«Un secondo chiodo, con moschettone, serve per passarvi la corda di sicurezza». Calandosi di poco, tirando con la mano libera e spingendosi coi piedi, si può così attraversare un breve tratto di roccia, impossibile a vincere in altro modo.

Se si tratta di traversata più lunga, sarà bene applicare qualche chiodo che eventualmente tentare la traversata a pendolo (messa in opera per la prima volta da Herzog e Fiechtl, nel Wetterstein).

«Il chiodo che serve di sostegno per la corda, è, in questo caso, infisso ad un'altezza di 10-15 metri sopra la traversata. Si farà uso di un sistema di cataste a bretelle, per evitare che il corpo scivoli durante la manovra. Poi si dà una forte spinta dalla parete che forma il punto di partenza».

Corda a passamano

«Dopo aver superata la traversata, il capocordata fisserà la corda di sostegno o ad un altro chiodo, appositamente infisso, od a una solida sporgenza di roc-

ti, il capocordata deve far attenzione che non vi sia bloccata la corda portante. Quindi: prima oltrepassare il chiodo colla corda portante (che è la corda doppia) e poi agganciare la corda di sicurezza».

La traversata a pendolo

«Qualora la parete da attraversare sia assai ripida e priva di appoggi, si può

E.M.

Vittorie di rocciatori italiani

(Continua da pag. 1)

Il campo preferito dal Bonaglia sono i monti che fanno corona a Balme, da lui ascesi tutti, con varianti alle vie comuni. Egli dimostra passione sopratutto per la roccia. E' così che nel mese di agosto il carnet dei pugni, accompagnato dall'amico Ferro Famil Giuseppe, detto «Vulpot» valorosa guida ed abile scalatore, ha compiuto una «prima ascensione» alla Dentina, nel gruppo della Bessanese, in Valle di Lus. Prima ascensione, per intenderci, direttissima, per la parete est, chè la Dentina non è cima vergine. Bonaglia ha scelto la via più difficile per conquistarla e vi è riuscito dopo tre ore. Egli ha presentato una minuziosa relazione al Club Alpino, che lo spazio, tiranno, ci impedisce di dare ai nostri lettori.

Una via diretta sulla Cima Molveno

Recentemente scrivono da Trento, nello scorso mese il dott. Luigi Battisti di Trento, con la guida Silvio Agostini hanno aperto una nuova via sulla Cima Molveno: via diretta dalla Vedretta dei Sfulmini. Non siamo però in grado di dare maggiori particolari.

Negli Appennini centrali

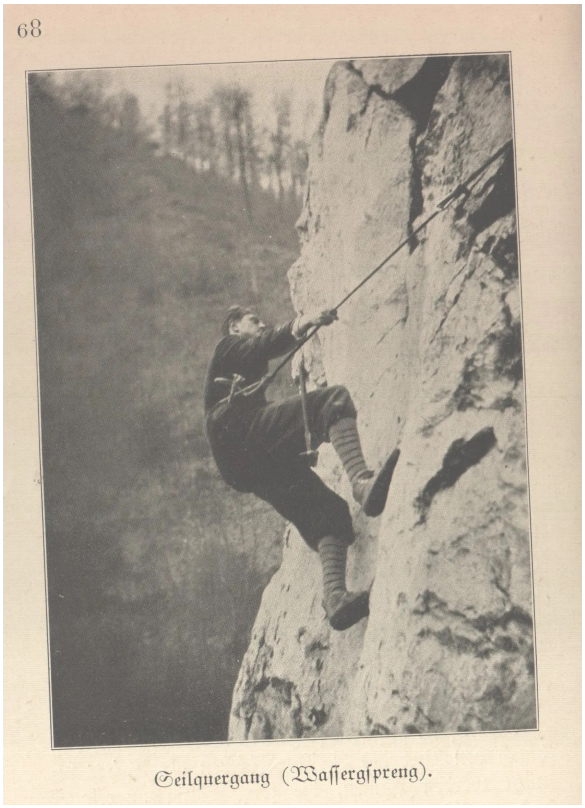
La sezione dell'Aquila del C.A.I. che dimostra un'attività veramente notevole emergendo sulle consorelle di tutta l'Italia centrale, conta pure un buon gruppo di valenti scalatori che, proprio di questi giorni, hanno portato all'attivo della sezione abruzzese nuove vittorie.

Una «prima» al «Corno Grande» (vetta orientale m. 2903) è stata compiuta per la cresta nord da Manlio Sartorelli, Domenico e Dario D'Armi. Furono necessarie 18 ore di lotta accanita, intermezzate da un bivacco in difficile posizione. La loro prolungata assenza dal rifugio Garibaldi, donde avevano preso le mosse, fece sì che una carovana di soccorso partisse alla loro volta. Fortunatamente però gli audaci scalatori erano già ritornati incolumi al rifugio dopo aver tolta al gigante dell'Appennino una delle pochissime incognite che ancora assillavano la loro passione.

Lo stesso Manlio Sartorelli, con la signorina Gabrielli di Roma e il dott. De Benedetti di Spezia, aveva tempo fa effettuato la prima ascensione della cresta S.-SW. del Monte Velino (m. 2487).

La prima ascensione al Pizzo Cefalone (m. 2532) per la parete nord-est, sempre nel gruppo del Gran Sasso, è stata compiuta da Emilio Tomassi e Gianni Marinangeli.

The Dülfer rope traverse method using a separate rope used on his 1912 ascent of east wall of the Fleischbank and on his 1913 direct west wall route on the Totenkirchl was eventually made obsolete with carabiners and improved belay techniques, but still described and used in 1931.



68

Seilquergang (Wassergspreng).

The Seilquergang as depicted in Karl Prusik's 1929 instructional book, "Ein Weiner Kletterlehrer" (A Vienesse Climbing Instructor).This is a distinct technique from the Dülfer method as it requires assistance from the belayer.

Author note: after completing a pendulum on the first ascent of Kali Yuga on the northwest face of Half Dome in Yosemite, I jokingly suggested a new rating system for such big wall maneuvers to Walt, rating that one P4, as it was a very difficult traverse on the overhanging wall leading to a very tenuous series of moves to gain another crack system far to the right. With this scale, the flexing knifeblade anchor for the Nothing Atolls pendulum on the Pacific Ocean wall would be considered P2. But despite the skill and fear needed for safely overcoming such maneuvers, thankfully there has never been need for an additional rating system for pendulums.

Thank you and goodbye for now, Mr. Piaz
Having considered these early contributions by Piaz to the techniques and limits of rock climbing by 1908, we leave Piaz here, though by no means were his contributions over; he continued to establish cutting edge ascents using the latest tools and techniques of climbing throughout his long and adventurous career, and a whole book could be written on his family life, theatre career, military service, and civic involvement. He built rufugios and brought many to the mountains for the first time, and his work in the rescue field was no doubt remarkable. Piaz climbed with kings (Albert I of Belgium), and his routes were held in high esteem among climbers in the Eastern Alps. He was known to be generous with information about his climbs and techniques. Riccardo Cassin wrote of meeting Piaz in the Catinaccio group in the early 1930s and having "an immediate rapport." Said Cassin: "I grew to admire his limitless love of the mountains, his youthful spirit and his modesty about his own routes, his innovations in climbing techniques." The Austrian Conrad Kain climbed the Marmolada with Piaz, calling it "the most arduous tour I ever made", and later moved to the Canadian Rockies and established the hardest climbs in the Bugaboos where big rock walls were first becoming accessible to the climber.

Piaz was a bold and brash climber who loved the limelight (though the boastful language in his writing often was tongue-in-cheek). For a climber, Piaz's soloing, bold free climbing, speed climbs and enchainments, big walls, complex rescue rigging, and professional guiding techniques are truly remarkable in their pioneering spirit.

The following chapters are not in pure chronological order, but roughly in the order of how they were researched and some information may be repeated. As my research continues, these chapters may get reorganised with better segues.

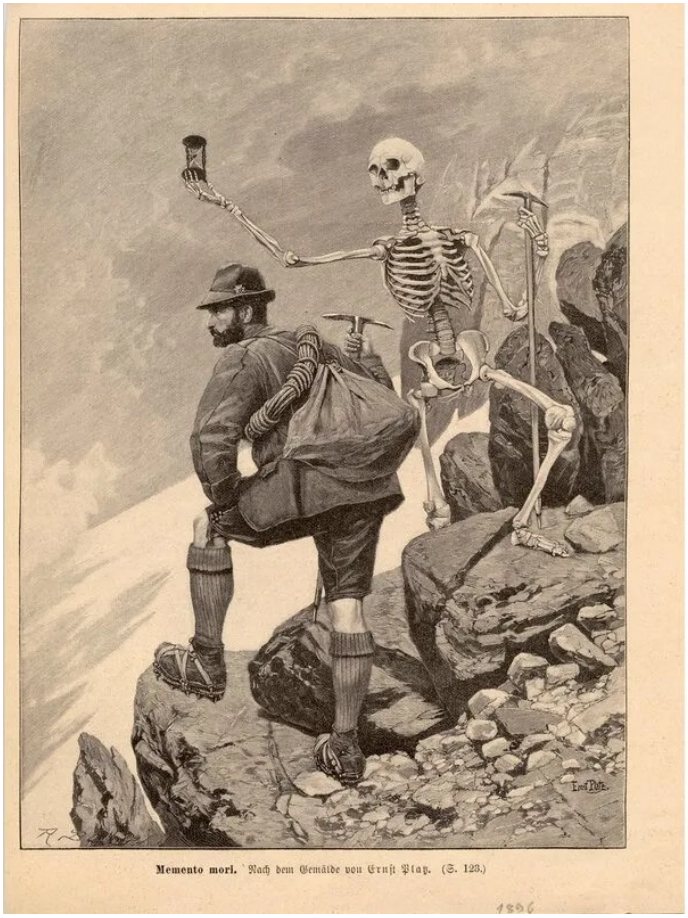
Full size images are readily searchable at bigwalls.net/search.html

Unterwäsche in Wolle, Halbwolle und Baumwolle.
Echte Jäger-Wäsche bei
Adolf Schlesinger, München, Prielmayerstraße 16, gegenüber Justizpalast.
Für Mitglieder Preisermäßigung.
Rückenseite mit Schonerstoff versehen
GES. GESCH.
M. GRÜNZWEIG LANDSHUT B.
Ganz unauffällig zu tragen.
Vorzüglich bewährt bei der Pamir-Expedition (im Jahre 1913) des D. u. Ö. Alpenvereins hat sich die
Grünzweig's gesetzl. geschützte
Rucksack-Stütze
Sie ist die tatsächliche Erleichterung für jeden Rucksackträger.
25 mm Luftzirkulation. Kein Abdrängen noch Pendeln des Rucksackes. Keine Mehrbelastung (Gewicht ca. 150 Gr.). Jederzeit, speziell auf Schnee und nassem Gestein angenehme Sitzunterlage. Spezielles Damenmodell. Näheres Prospekt. Feinste Referenzen. Preis M. 3.30. Bezug durch die einschl. Geschäfte, wo nicht erhältlich dann direkt von
M. Grünzweig, Drahtwaren-Fabrik, Landshut i. B.
Für Deutschland Generalvertreter: E. GERATSDORFER, München 50
" Österreich " E. BLATTMANN jun., Wien IV/2,
" Schweiz " FRITSCH & Co., Zürich.
Der bekannte Dolomitenführer Herr Giovanni Battista Piaz au:
Perra-Fassa schreibt:
Unter allen den im Handel befindlichen Rucksackstützen ist meiner
Ansicht nach die „Grünzweigsche" die beste.

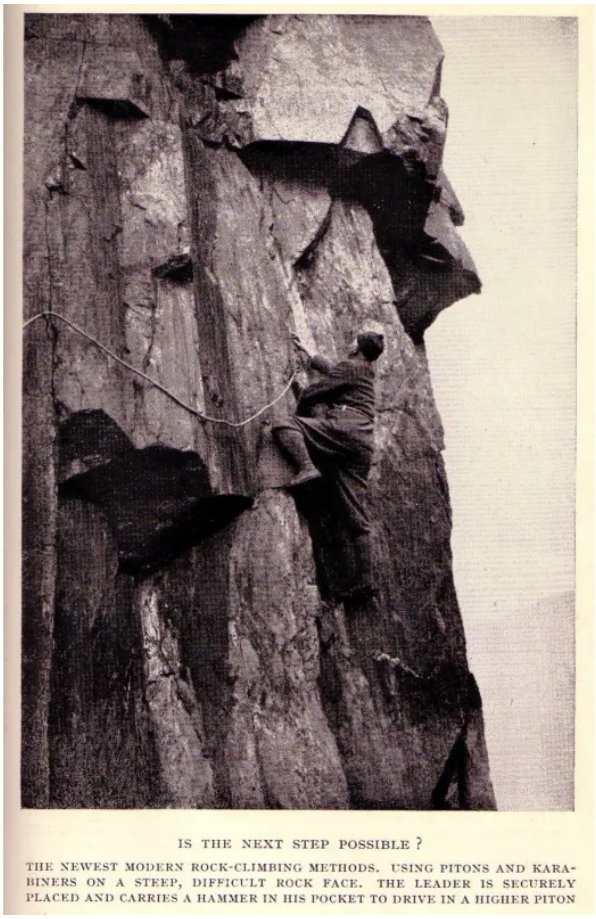
Piaz, the product endorser.

The last photograph of Tita Piaz, and the sad news of his death from a bike accident in Pera di Fassa on August 6, 1948 at age 68.

Conjecture: No one really knows what kind of pitons Piaz was using in this early period. He uses the term “ring of rope” as a device nailed directly into the rock with a hammer, and sometimes chiseled in, as in the case of Ugo de Amicis’s first anchor. Other descriptions also lead to a conjecture that perhaps the piton and loop of cord were tied together; in other words, a piton with an eye to which a cord could be connected. Ring pitons are sometimes specifically referenced in the context of rappel anchors, but not often. There is no known surviving pre-1910 hardware of Piaz, though perhaps some unidentified gear still exists in some local curio museum. Perhaps he was just using simple spikes; other German climbers referred to Piaz’s use of Mauerhaken, a term used generally for any sort of metal anchor by this time, but there are strong clues he was using something other than an L-shaped spike. Piaz was also very involved with mountain rescue, involved with over 100 rescues in his career, and known for his complex rigging requiring safe rope and anchoring techniques at a moment’s notice. Elsewhere, in the Elbsandsteingebirge, there is evidence that between 1900 and 1910, pitons/bolts of different sizes were custom-crafted for climbing, with an inline eye for attaching a cord, rather than a ring—technological developments for this region will be covered in another post. What is clear is that soon pitons would evolve into the Fiechtlhaken, thin flat steel pitons with an offset eye (covered previously), to enable ever-more efficient lightweight climbing safety systems, and throughout his career, Piaz adopted all the latest climbing tools.



Memento mori. Nach dem Gemälde von Ernst Platz. (S. 123.)



IS THE NEXT STEP POSSIBLE ?

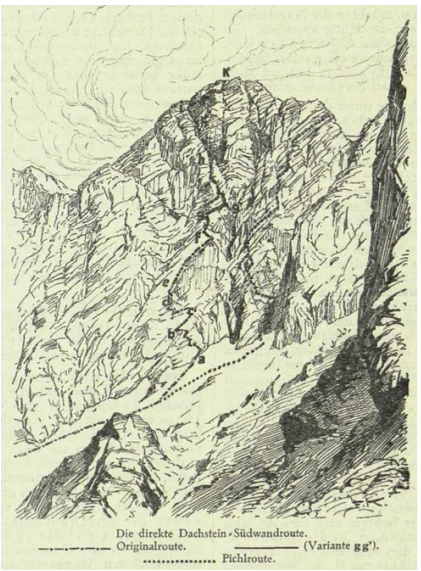
THE NEWEST MODERN ROCK-CLIMBING METHODS. USING PITONS AND KARABINERS ON A STEEP, DIFFICULT ROCK FACE. THE LEADER IS SECURELY PLACED AND CARRIES A HAMMER IN HIS POCKET TO DRIVE IN A HIGHER PITON

Climbing evolved in the first four decades of the 20th century with safer tools and techniques. Left: Memento Mori by Erst Platz, c.1894 (Latin for “Remember you will die”). Right: George Abraham asks in 1933, “Is the next step possible?” even though the next step had already been well established in the European Alps in the prior three decades.

Climbing Tools and Techniques—1908 to 1939 (Europe, PartA) Myths and Legends

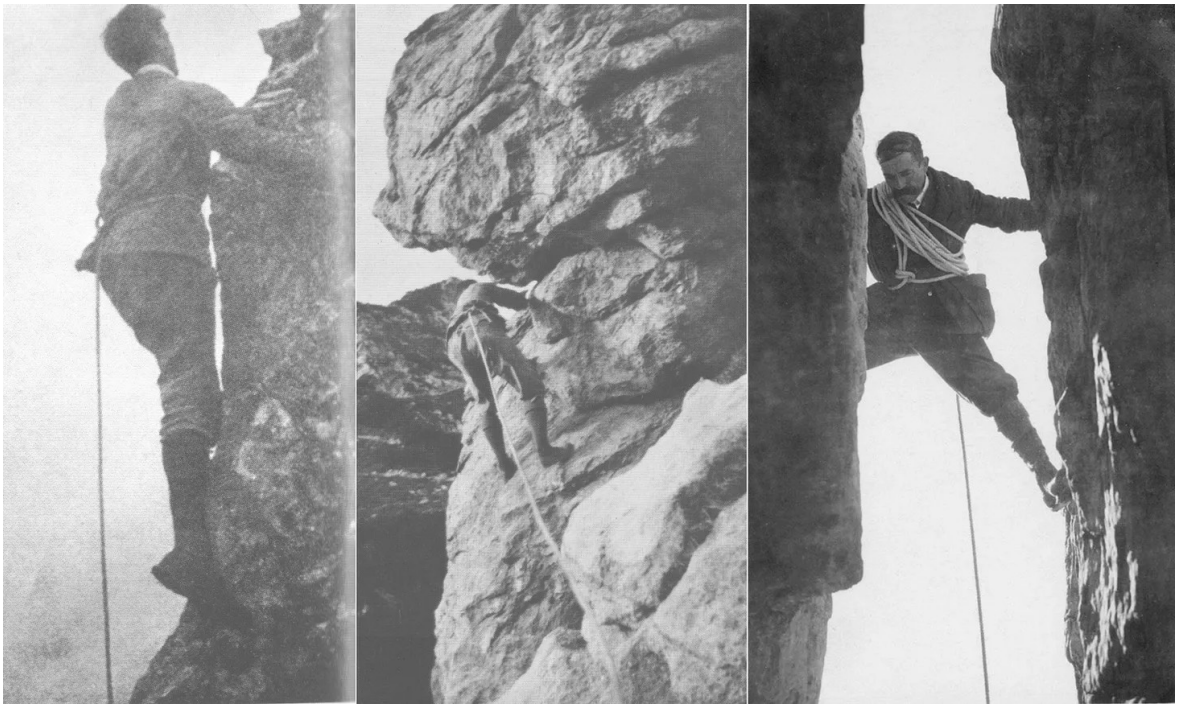
New "acrobatic" techniques with pitons
With famous ascents like Piazturm on the Totenkirchl in 1908, the tall rock walls were eyed in new light. No longer was a continuous line of climbable rock required for ascent—by this time, climbers spent a lot of time studying the rock walls with binoculars for potential lines, and could better decipher the hazards and challenges of vertical rock, charting precise paths before setting off. When asked about careful pre-inspection of the potential routes up a mountain, Whymper once said, “None but blunderers fail to do so”. On the tall, complex and steep vertical walls in the Eastern Alps, climbers were now extending the concept of precisely mapping a climb prior to setting off to a fine art. By imagining connecting discontinuous climbable features with roped traverses, the impossible was made visible. Climbing longer walls and enchainments on routes equipped with anchors and rappels, swinging around on ropes and setting up Tyrolean traverses, and going bolder on vertical rock was also becoming more mainstream among the athletic elite, especially in the Dolomites and the North Tyrol limestone walls, where the possibilities were endless, and the challenges great.

By any other name: Style, Ethics, etc.
There was still a fine line between what was considered the construction of an alpine path—the early “iron paths”, some getting dynamited and steel-laddered to ease passage (now known as via ferratas, which were also booming at this time), and what was considered “sporting”. We need to remind ourselves that most of the testpieces



DACHSTEIN, S. FACE.
(Steiner route to left, Pichl to right.)

A testpiece for many years: the Steiner bothers (Georg and Franz) 1909 route on the 900m south wall of the Dachstein in the northern Limestone Alps was one of the first routes acknowledged as justified in its use of pitons in the Alpine Journal by L.S. Amery in 1937: “used in moderation, the piton or ring-topped peg driven into a crack in the rock” are “perfectly legitimate mountaineering devices, adding greatly to safety as well as calling for their own technique.”



Left: Hans Dülfer on the Pregigstuhl north wall. Middle: Willi von Redwitz on the Totenkirchl. Right: Angelo Dibona in a chimney—note the big front jacket pockets for gear.

well into the late 1920s were predominately free climbs that would still be considered quite bold today for their grade, which at the time was pushing 5.9 in Yosemite grades, and even harder in the Elbsandsteingebirge. Pure aid climbing, going from piton to piton ("hook to hook" in German) was initially still highly frowned upon, even if only used for a short section of a long climb. Tita Piaz later called those who employed such tactics as "rock gangsters", Hans Fiechtl in particular as a "specialised nailer" and a "conjurer of forbidden passages". Fiechtl of course is credited with the modern offset-eye piton, a piton design which Piaz also certainly adopted for his own climbs (note, however, the most common pitons from 1910-1914 appear to be simple ring pitons with welded rings, as electric welding was becoming more widespread in the pre-WWI years as the electricity grid expanded across Europe, and a flat piton with a welded ring was still the easiest piton to make). Hammers were becoming standard equipment, and most climbers had a small rack of pitons for the testpieces of the day.

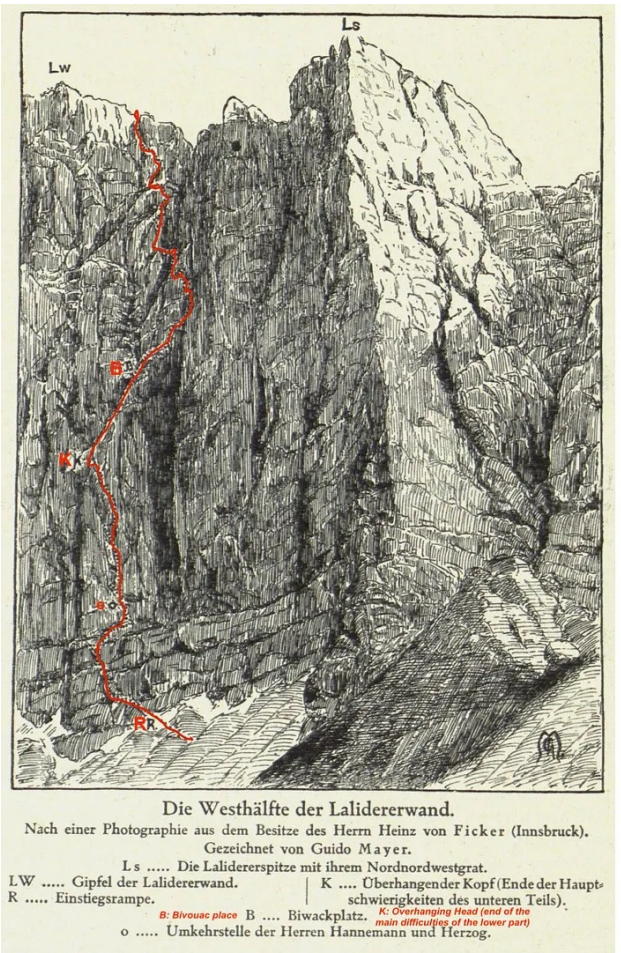
Footnote: the term "testpiece" used by climbers, is a route eventually generally recognized as a new standard, not always in pure difficulty in terms of something numerical, but one that stands unique in its place on the edge of the possible.

Footwear was also evolving, tighter shoes with better friction and flexibility that allowed more gymnastic climbing. The felt-soled, and later rubber-soled Kronhofer-type shoe is most often seen for the technical rock routes, though some climbers were moving toward even tighter fitting lasts without an edged sole. When leading, climbers tied into the rope with the knot on the back, to lessen the chance of breaking one's back on a hard static rope fall, and gear—nails, hammer, and later even carabiners—were all carried in one's pockets—jackets with big pockets were common wear (often with wide neck collars for evolving abseil techniques).

Dependence on gear evolves

Many of the testpieces of the first decades of the 20th century involved “artificial aid”, which included pitons placed on lead to protect free climbing sections, as well as using pitons to protect diagonally downward traverses, which were not as frowned upon as to make upward progress “hook to hook” in short sections of the climb. One of the pioneers who further pushed new frontiers of the fusion of technology and human ability on intimidating rock walls was Angelo Dibona, one of the great guides in this era. His route on the 800m north wall of the Laliderer in the Karwendel range with Guido and Max Mayer, and Luigi Rizzi required a bivouac on route and set new standards of difficulty on the long routes. According to Max Mayer in the 1912 report of the route, they “only” had 15 pitons, and one section in particular required complex piton and rope work to overcome a tricky downward rope traverse (marked K for"Kopf" for overhanging "head” on topo). Max writes:

…the first rest after almost 8 hours of hardest climbing. After that, Angelo takes up the fight again and, after a vain attempt to climb the overhang directly in front of us, descends a few meters to the left, well secured, into a shallow, overhanging, obtuse- angled corner (in the mentioned report of the German Alps newspaper», the



Die Westhälfte der Lalidererwand.
Nach einer Photographie aus dem Besitze des Herrn Heinz von Ficker (Innsbruck).
Gezeichnet von Guido Mayer.
Ls ..... Die Lalidererspitze mit ihrem Nordnordwestgrat.
LW ..... Gipfel der Lalidererwand.
R ..... Einstiegsrampe.
K .... Überhangender Kopf (Ende der Hauptschwierigkeiten des unteren Teils).
B: Bivouac place B .... Biwackplatz.
K: Overhanging Head (end of the main difficulties of the lower part)
o ..... Umkehrstelle der Herren Hannemann und Herzog.

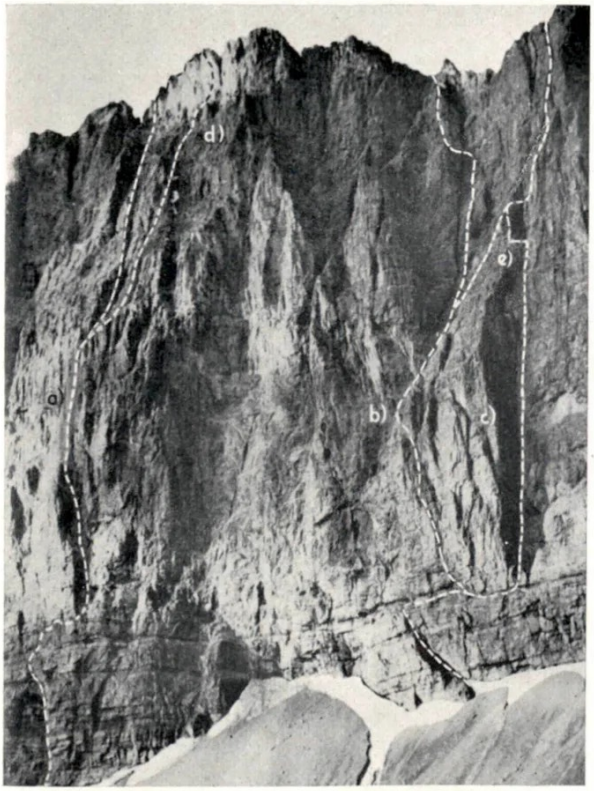
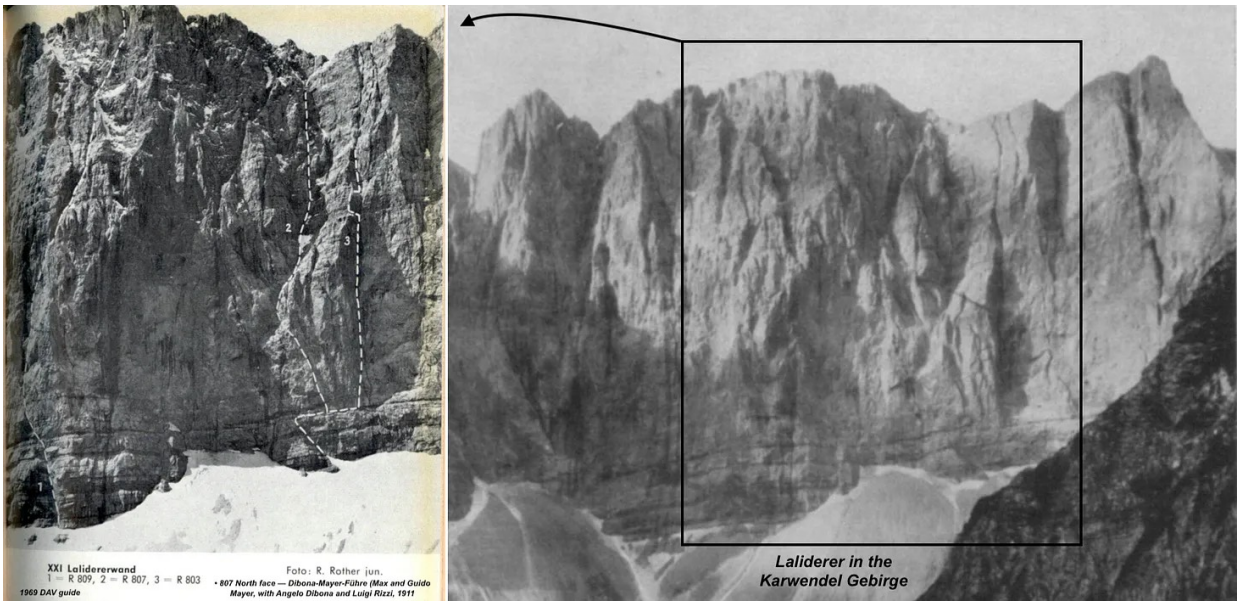


Abb. XI: Laliderer Wand — Nordwand
a) Krebs-Schmid-Führe, R 809; b) Dibona-Mayer-Führe, R 807; c) Nordverschneidung, R 803; d) Ausstiegsvariante, R 810; e) Rebitschausstieg, R 808

Left: Illustration in the 1912 Mitteillungen article by Max Mayer from Vienna on the first ascent of the Laliderer north wall. Right: DAV guidebook.


XXI Lalidererwand
1 = R 809, 2 = R 807, 3 = R 803
1969 DAV guide
Foto: R. Rother jun.
• 807 North face — Dibona-Mayer-Führe (Max and Guido Mayer, with Angelo Dibona and Luigi Rizzi, 1911
Laliderer in the Karwendel Gebirge

Dibona-Mayer route on Laliderer in context of the whole wall.

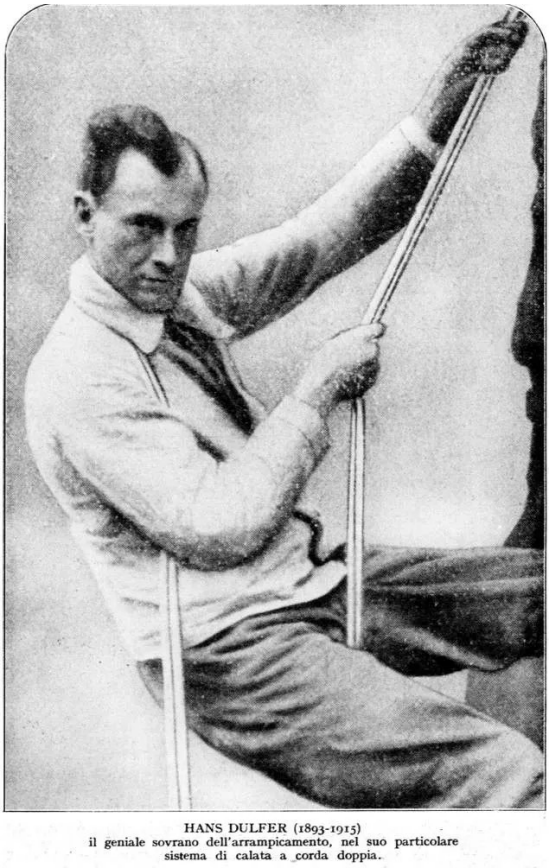
term «extraordinarily difficult» does not refer to the overhanging intersection, but rather to the downward traverse to the left). With great effort and with the help of several hooks, he conquers inch by inch until it is no longer possible to climb in a straight line. With pounding hearts we follow the bold as, pulling the double rope through a ring higher up, he takes the terrible step to the left, to the mirror-smooth edge. Reluctantly, the right foot exchanges the secure hold of the hook for the almost vertical plate of the bead. Suddenly a slight crunch lent the fateful gliding of the foot on unsupported rock; but already Dibona is happily on and withdraws from our field of vision. A few minutes of extreme suspense and agonizing excitement pass, then Angelo announces victory: "I'm in the gorge!" We breathe a sigh of relief when the next message comes: "Now things are going better!" Now a new question arises: descending over this point, which perhaps even surpasses the heaviest upper overhang on the ödstein north face in the Ennstal, where the safety rope from above must be described as an extremely questionable one. If we want to take the same route as Dibona, the night might still surprise us here; the thought of commuting across to the gorge and climbing directly up its smooth drop is also discarded. So we have to shimmy across using a fixed, crooked rope, which, apart from the impossibility of using the rope, also works smoothly, so that we can soon stand together and see that Dibona is right, really better walkable rock follows. After we the loosened the ropes that bound us, and continue our way in two separate teams, and after a short time, climbing in or next to the gorge, we reach a larger rubble dump, the white rock of which often indicates falling rocks, from which we fortunately were completely spared remain. Rather exhausted we settle down here on Mother Earth, in the happy knowledge of having completed our day's work. (MAX MAYER, 1912)

The description of Dibona's traverse on Laliderer sounds awkward and risky. Today we call such climbing A0, when you are

relying on gear to maneuver, and often making complex free moves, sometimes jumps, in conjunction with tension from the rope. Using the rope-sling-piton system of climbing, more technical challenges were possible, that still involved a highly skilled technique, and most importantly, enabled efficient fast and light climbing. Many disparaged the new techniques as “mere engineering”, because of course, that is exactly what they are. It took a keen mind to envision rope safety systems on the ever-more complex rock climbing, finding safe places to belay, maneuvering onto easier ground, all in the steepest rock imaginable. “Airy” is the one word that describes it best, because there is a feeling of flying, the perspective takes a strong will to situate, and a heightened sense of fear adds to the puzzle. Accidents were increasing too, and then, as now, accidents were reported in journals with analysis of failure modes, so that the climbing communities that were sharing the information were also the ones most advancing the tools and techniques in terms of safety and efficiency, knowledge that began in the Tyrol and Dolomites, and took decades to filter to the rest of the world.[33]

Hans Dülfer (1892-1915)

In the years prior to strong reliable carabiners, Hans Dülfer is the one to advance the art of vertical rope engineering significantly by creating the first controlled rope traverse system for ever-bigger lateral moves on the steep. But before we look at exactly what Dülfer was up to, we need to clear up a couple myths.



HANS DULFER (1893-1915)
il geniale sovrano dell'arrampicamento, nel suo particolare sistema di calata a corda doppia.

Around 1912, Hans Dülfer innovated a self-sufficient rope traverse system using a second rope in order to lower himself and perform a controlled traverse with rope tension across blank sections of wall.

Myth #1: Dülfersitz is not the Dülfersitz

In the early literature, there are only rare depictions of the under-the-arm method of abseil now commonly called the Dülfersitz, which is actually only one of many variant rope body-break systems seen in early technique books and articles. Various configurations of the rope passing around the legs and body offer varied advantages

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[33] author note: once I was walking along the base of Tiger Wall in Arapiles, and I looked up and saw Malcolm Matheson setting up another outrageous roof climb of the highest difficulty. The way he was swinging around in space, moving deftly up and down and across sometimes with only a fingertip holding him back from an airy pendulum in space, and realized that the A0 of the past had been superseded by the climbers establishing the most difficult sport climbs of today. His acrobatics were amazing. In the 1980s, we would have called such maneuvers A0+.

and disadvantages in terms of strength required vs. the amount of skin potentially lost from burns from the rope passing over the shoulder or hips under tension. Piaz's upside-down rappel was probably the most spectacular.

Abseil Evolution

The "down-roping" (abseil) technique generally employed in the first decade of the 20th century on the famous long, free-hanging abseils is a gymnasium technique with the rope wrapped around the foot and with one leg locking the rope with the other leg, and called the "Kletterschluss". This technique requires very good core strength to maintain a safe controlled descent.

"Kletterschluss" (climbing finish) techniques. Left: Tita Piaz by Guido Rey, 1914. Right: Anwendung des Seiles, 1907.

A natural evolution of abseil/rappel techniques soon occurred, and early literature shows techniques involving wrapping the rope around different parts of the body to provide friction and control. In the 1910s, abseil methods with the rope wrapping around the body begin to appear, and the main method of abseil was with the rope wrapped twice around the leg and over the shoulder.

The real Dülfersitz: the self-belayed tension traverse

What Dülfer was most famous for at the time, and well into the next decades, was a specific variant of these techniques, with the rope passing around the neck—designed not so much as for pure descent, but rather a means of traversing involving tensioned maneuvering with a separate, second rope—perhaps a "self-belayed tension traverse" would be a more accurate description of the innovation Dülfer brought to the table.

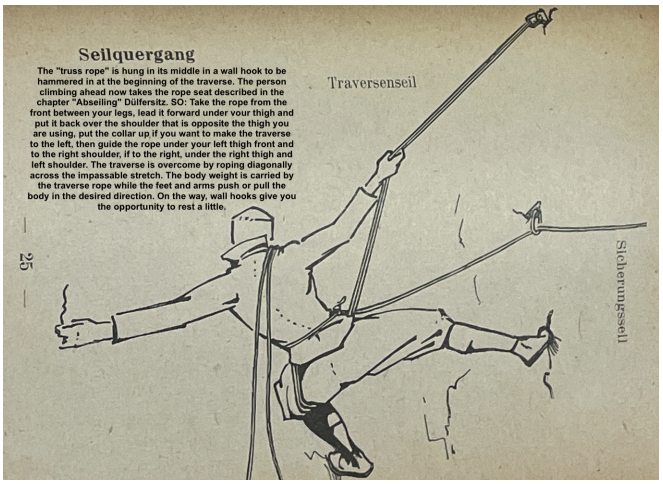
Author's Note: Like many, I had a common misconception of rappeling evolution, but have since discovered the Dülfersitz is not the original climbing technique Dülfer innovated. At the Telluride Mountaineering School, run by Dave Farny, from 1974-1978, we learned (and later taught) climbing techniques in the sequence as they had been learned for decades—first top-roping and down climbing steep slabs with heavy boots, then swinging leads and simul-climbing on long easy climbs like the Wham Ridge on Vestal, and eventually graduating to climb modern routes with clean protection and climbing shoes with greats like Henry Barber. Although aluminum figure-eight descending devices were widely available in the 1970s, we rarely had harnesses—we generally tied into the rope with a bowline on a bight—so our only means of roped descent was the classic well-practiced rappel/abseil technique known as the Dülfersitz, as depicted in every published textbook on climbing of the era, for example, as in the classic climbing instructional, Basic Rockcraft, by Royal Robbins.

THE DULFER: This is the classical method and the one to learn first. Straddle the rope facing the anchor point. Bring the rope around the left hip, across the chest, over the right shoulder and down across the back to be held in the left hand. This is the braking hand, and the right is used mainly for balance. (These directions, of course, can be completely reversed.) When learning to rappel, use the protection of an upper belay. It is best to begin on a slope of about 60 degrees. Slowly back down, balancing with the upper hand and braking with the lower.

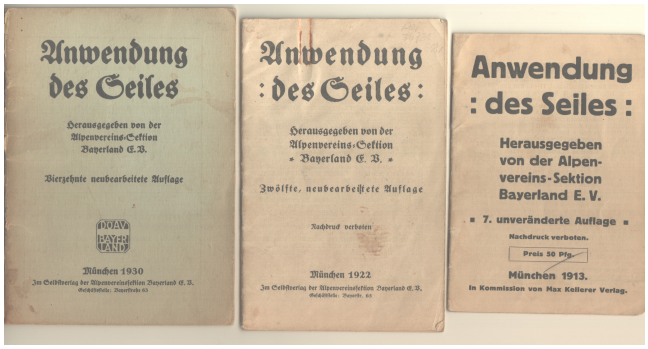
Basic Rockcraft, 1971-1985 Royal Robbins

Climbers using around-the-neck rope braking techniques are often depicted with shirts or jackets with tall collars, a necessity for the Dülfer around-the-neck technique. The method developed by Dülfer is a very effective rope control system when the climber needs optimal use of the hands to move across rock under tension.

Dülfer's system involves a separate, second rope for lowering on and traversing, and his technique was made famous when he employed it on his groundbreaking routes on the Fleischbank in 1912 and the direct line on the Totenkirchl in 1913 in the Kaisergebirge, both of which involved previously unimaginable traverses across blank rock. The technique became more widespread in the Eastern Alps, as it was far safer than having a tensioned climbing rope over a Seilring—a rope sling that could be cut and burned by friction—so climbers began bringing a second, shorter rope for such maneuvers in the era before strong carabiners. The technique could also be used for a straight rappel as Platz illustrates, but it is most effective as a self-belay when moving across rock due to the optimal freedom of both hands.

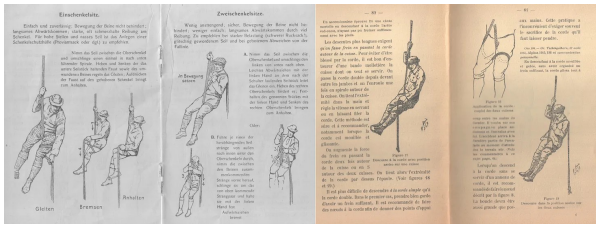

Seilquergang
The "truss rope" is hung in its middle in a wall hook to be hammered in at the beginning of the traverse. The person climbing ahead now takes the rope seat described in the chapter "Abseiling" Dülfersitz. SO: Take the rope from the front between your legs, lead it forward under your thigh and put it back over the shoulder that is opposite the thigh you are using, put the collar up if you want to make the traverse to the left, then guide the rope under your left thigh front and to the right shoulder, if to the right, under the right thigh and left shoulder. The traverse is overcome by roping diagonally across the impassable stretch. The body weight is carried by the traverse rope while the feet and arms push or pull the body in the desired direction. On the way, wall hooks give you the opportunity to rest a little.
Traversenseil
Sicherungsseil
25

Original Dülfersitz. Note the rope wrapped around the leading leg on the traverse, then across the chest and over the shoulder then potentially around the neck for more friction. This configuration can be reversed depending on the direction of the traverse and allows better balance while traversing.



Revised editions of technique manuals provide clues to the evolution of techniques.

"On the Application of the Rope" article by Georg Meikel, München, 1911 Mitteilungen des Deutschen and Österreichishen Alpenvereins



More early roped body-break systems. Left: Anwendung des Seils (application of the rope booklet, 1913). Right: Le Conseiller de l'Ascensionniste, 1918 showing the popular double-leg-wrap and over-the-shoulder method.

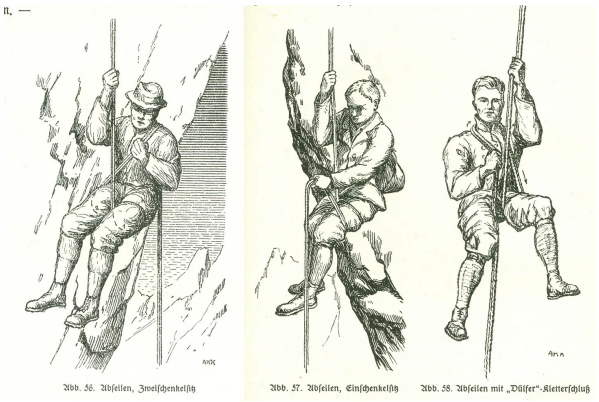
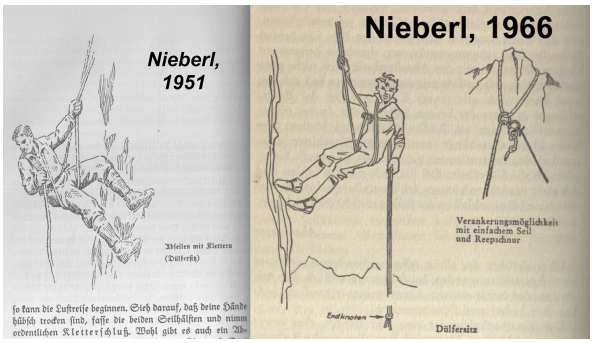


Abb. 56. Abseilen, Zweischenkelsitz Abb. 57. Abseilen, Einschenkelsitz Abb. 58. Abseilen mit „Dülfer"-Kletterschluß

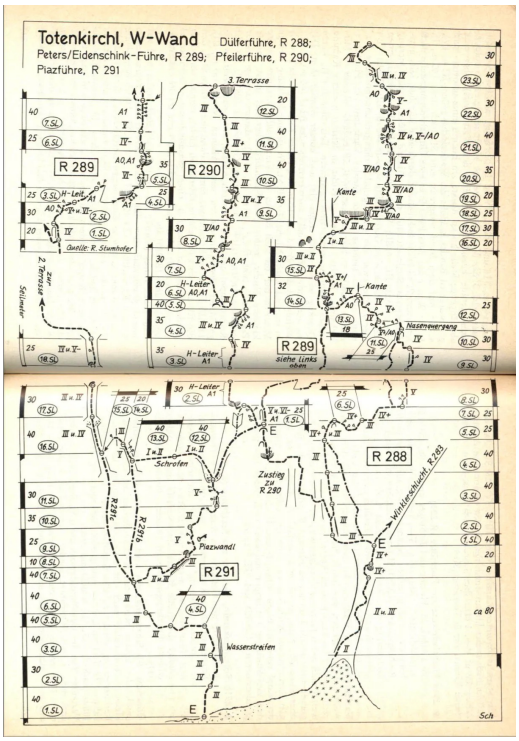
Other early abseil methods. Die Gefahren Der Alpen, Zsigmondy/Paulcke 1927

Anwendung des Seiles, 1922

The specific technique on the left is the one pioneered by Dülfer, with the rope going around the neck so it could be further braked under the armpit, allowing more options for use of the hands. The rope could be passed on the same side as the leg rope, or across the chest, depending on the steepness of the terrain and in which side-to-side direction you were moving. Right: Dülfersitz with the rope running around the neck depicted as both a means to tension traverse, and to abseil by Ernst Platz,1924.



Nieberl's depictions of the rope body-break system. The Dülfersitz rebanded. Here, Nieberl calls both these techniques the Dülfersitz, but they are actually quite different and represent the most common body rappel techniques of each era. The rope around the neck offers a different kind of control. The rope going under the arm, and then to the brake hand became the more popular method in the 1950s, with Dülfer still honored in its name.



Dülferführe, 1913 (DAV 1978 guide). The "Nose Traverse" (Nasenquergang) was the most difficult and exposed rope traverse at the time.

1912 Fleischbank (400m) and 1913 Totenkirchl (600m)

Whereas the original Piazwand on the west wall of the Totenkirchl had one tension traverse reliant on a point of aid, Dülfer took the rope traverse technique further with more complex, longer and more difficult tension traverses to link up challenging features, creating visionary lines in the Kaisergebirge range.

As tension traverse techniques evolved, more and more climbers were testing out these new techniques on smaller crags, and understanding the potential. Beginning in the 1920s, the Seilquergang, as it became known, was illustrated and described in many journals. Karl Prusik wrote a book on techniques in 1929 and considered the rope traverse one of six basic techniques that should be formally taught to every beginner climber along with knots, belaying, rappelling, hauling a pack and creating an anchor with pitons.

Fig. 3.
W. face of Totenkirchl.

The visionary Dülferweg on the Totenkirchl climbed in 1913 by Hans Dülfer and Willi von Redwitz with its feared "Nose Traverse".

1942

a) Dülfersitz

Für alle Abseilstellen zu empfehlen. Halt kaum zu verlieren.

Der Dülfersitz ermöglicht den freien Gebrauch beider Beine und läßt bei Benutzung eines nicht allzu schweren Seiles eine Hand zum Klettern frei.

Nimm das Doppelseil zwischen die Oberschenkel; führe es um den einen wieder nach vorn, dann schräg über die Brust zur gegenseitigen Schulter, um den Nacken und die andere Schulter wieder nach vorn, sodass es durch die Achselhöhle hinabhängt.

Der durch die Achselhöhle

— 17 —

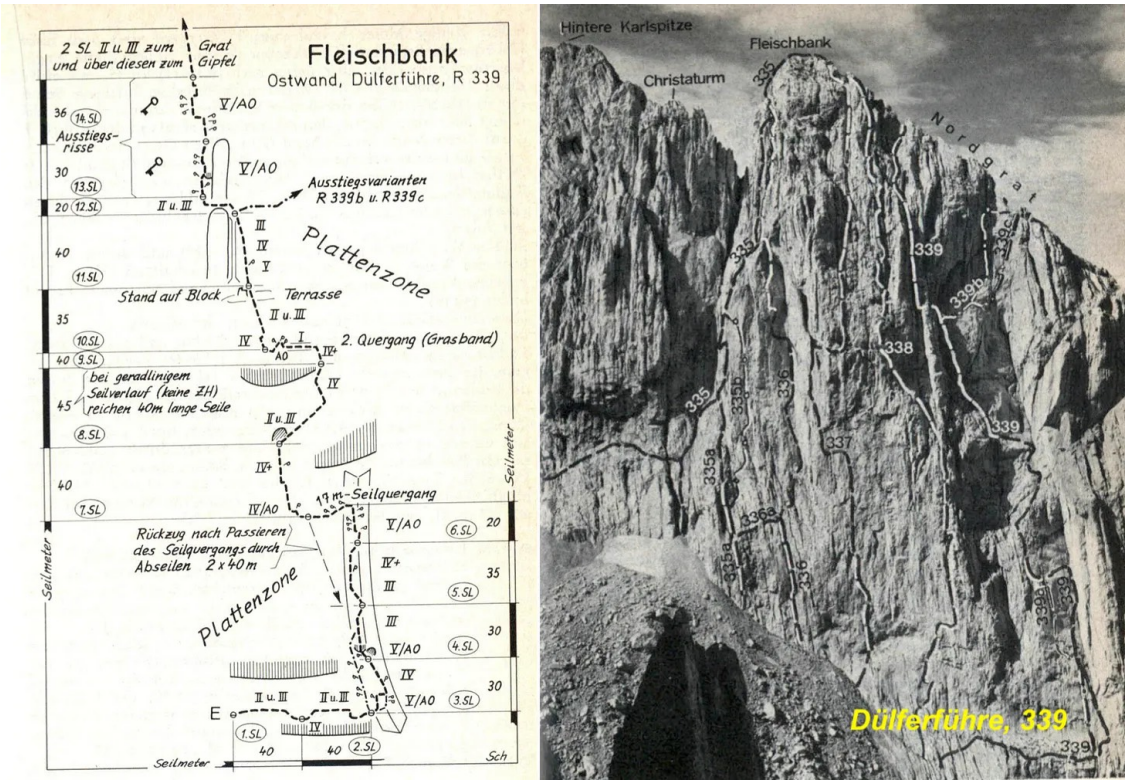
The Dülfersitz also became known as a descent technique.

Early Belays and Pendulums.

With all the new reliance on pitons and ropes, belay techniques needed to be safe and reliable. Over the shoulder, arm wraps, and even behind the back (hip belays) are described in the literature, in contrast to earlier depictions, where the belayer appears to be simply holding up the rope for the leader. People were definitely aware of the high impact forces a falling body generates, as many sad accident reports reflect, and climbers did not attempt to belay precariously as in the days prior to lightweight piton systems.

Hans Fiechtl and Otto Herzog famously introduced a carabiner to the rope traverse technique, used on the Schüsselkarspitze in 1913—a tension traverse so bold, that it became known as a pendulum[34].

[34] Footnote: The boundary between a pendulum and a tension traverse can be blurry. Nowadays, we call maneuvers a pendulum if it involves significant running back and forth to gain momentum, but both pendulums and pure tension traverses can be equally difficult as they both may require the same deft climbing at the end of the traverse. In other words, the "getting there" is easy, the "getting established at the end" is the hard part, and requires a careful belayer.



East wall Fleischbank (400m) by Hans Dülfer and Werner Schaarschmid, 1912, with the 17m Seilquergang. The route was repeated seven times in 1912 by Sixt, Deye, Pfann, and others, and it had been previously attempted by Fiechtl, Herzog, Sixt, and Deye. According to the DAV, "in October 1911 Sixt and Fiechtl mastered the spiral climb and the first rope traverse, but had to retreat because of bad conditions." (DAV, 1978).

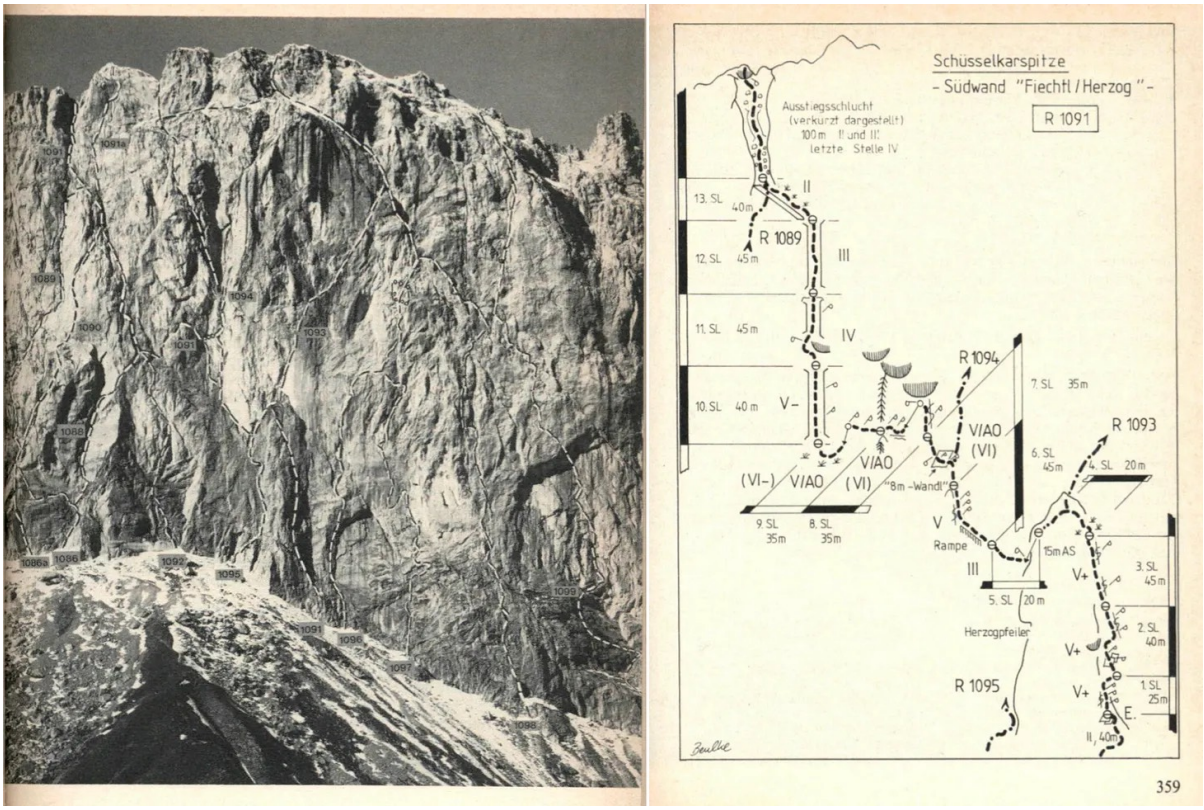
MYTH # 2—on the "invention" of carabiners for climbing.
Snap-links, for want of a better general name, evolved as steel and manufacturing techniques evolved. In 1887, the Teplitzer hut was stocked with "rescue rope with karabiner", and in 1898, a climbing harness system adopted from civil fire brigades, "with strong rings and karabiner hooks" was recommended for abseil in the German/ Austrian Alpine Club communications.

Forged steel karabiner on firefighter's Pompier's Belt.

Patents for various snap-links and carabiners, many forged designs, go back to the 1850s; most of these were complex, expensive to make, and heavy. Only a few climbers experimented with them.

In 1898 it was also noted, *"On the use of karabiners, opinions are very divided. Most karabiners have a closure held by spring, and might rightly be regarded by some as not sufficiently reliable."* This view did not change until later in the 1920s when stronger carabiners made from better steels become more widely available.

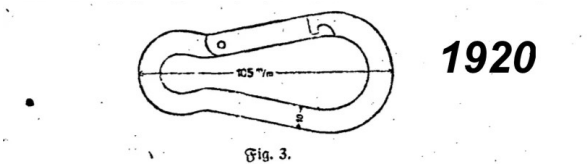
In the 1910s, there were many designs of snap-links available for various purposes (such as the famous hooks used to strap a carbine rifle to one's back), but most of these were not "full-strength" from a modern



The 1913 Schüsselkarspitze Fiechtl/Herzog route, showing the pendulums where a carabiner was likely used as a pendulum point by Otto Herzog. The Austrian Hermann Buhl devotes a whole chapter in his biography to the Schüsselkarspitze: "Everything a climber could ask for can be found on its south wall".

climber's perspective. But as piton protected climbs became more widespread, some of these everyday designs were used in the Eastern Alps for body-weight aid applications.

Somehow history has recorded Otto Herzog as "inventing the carabiner" for climbing in 1910[35]. It likely stems from his use of a snap link as a point of traverse which became famous in 1913 after his climb on the Schüsselkarspitze. The actual evolution of carabiners for climbing and running belays will be studied in detail in this series.



State-of-the-art climbing climbing carabiner design, 1920. Whether strong or weak, such links were all called Karabinerhaken (carabineer's hook) or simply Karabiner.

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[35] The myth of Herzog inventing the carabiner comes from a secondary source decades later, of someone remembering him using carabiners in 1910. Instead of "inventing the carabiner", Herzog was more likely initially known for his introduction of the carabiner for a tension traverse: a rope system with a climber on one end of a carabiner pulley and a belayer on the other, which enabled new levels of control and distance for acrobatic swinging around on the high cliffs. The carabiners that Herzog used were very likely body-weight only, and would not withstand the impact of a climbing fall.

Lo Scarpone September 1931 #17 LO SCAR

Manovre di corda

Traversata di corda alla Dülfer per capocorda e corda a passamano.

In altra parte del giornale, e precisamente dove si parla delle ascensioni nel Kaisergebirge è fatto cenno alla tecnica di traversata trovata da Hans Dülfer, che permette di superare delle brevi traversate, che sarebbero di impossibile effettuazione in altro modo.

Dal manualetto del Merlet sull' « Uso della Corda » (1) ricaviamo quanto può interessare i nostri rocciatori su tali manovre.

Il rocciatore deve anzitutto portare una corda di riserva, possibilmente più leggera e scorrevole (corda a treccia).

Arrivato al punto della traversata sale un poco, pianta un chiodo, infila il moschettone ed in esso fa passare il cor-

Traversata di corda

dino, esattamente come per calata a corda doppia, facendolo passare attorno alla coscia ed alla spalla opposta (alzando il bavero) (vedi schizzo).

« Se la traversata va eseguita verso sinistra, fa corda è passata intorno alla coscia sinistra, davanti al petto ed alla spalla destra. Viceversa, se la traversata va verso destra ».

« Un secondo chiodo, con moschettone, serve per passarvi la corda di sicurezza ». Calandosi di poco, tirando con la mano libera e spingendosi coi piedi, si può così attraversare un breve tratto di roccia, impossibile a vincere in altro modo.

Se si tratta di traversata più lunga, sarà bene applicare qualche chiodo che

Calata a corda doppia col sistema a bretelle (Sistema «Dolomiti») raccomandabile per calate molto alte e difficili ed in caso di estrema stanchezza.

servi per la corda di sicurezza, impedendo così che lo scalatore sia riportato al punto di partenza, in caso che dovesse perdere l'appoggio di mani o piedi, lungo la traversata stessa ».

« Passando la corda di sicurezza nei moschettoni agganciati ai chiodi predet-

(1) « *L'uso della corda* », edito dalla Sezione Bayerland E. V. del D.C.A.V. di Monaco, edizione italiana a cura della Casa Merlet e C. di Bolzano, traduzione dal tedesco di F. Terschak di Cortina d'Ampezzo, con disegni e copertina del Dott. Erwin Merlet di Bolzano.

Si tratta dell'edizione italiana di un volumetto già tanto conosciuto in Germania, nella Svizzera e din Austria, ove è diventato un aiuto indispensibile per l'alpinista, sia esperto che principiante. Contiene in breve spazio tutto ciò che si deve sapere della corda alpina, dell'uso su roccia e ghiaccio, ed anche dell'altro attrezzamento alpino, come chiodi da roccia e da ghiaccio, martelli, moschettoni ecc. alla portata

ti, il capocordata deve far attenzione che non vi sia bloccata la corda portante. Quindi: prima oltrepassare il chiodo colla corda portante (che è la corda doppia) e poi agganciare la corda di sicurezza ».

La traversata a pendolo

« Qualora la parete da attraversare sia assai ripida e priva di appoggi, si può

E.M.

eventualmente tentare la traversata a pendolo (messa in opera per la prima volta da Herzog e Fiechtl, nel Wetterstein).

« Il chiodo che serve di sostegno per la corda, è, in questo caso, infisso ad un'altezza di 10-15 metri sopra la traversata. Si farà uso di un sistema di calata a bretelle, per evitare che il corpo scivoli durante la manovra. Poi si dà una forte spinta dalla parete che forma il punto di partenza ».

Corda a passamano

« Dopo aver superata la traversata, il capocordata fisserà la corda di sostegno o ad un altro chiodo, appositamente infisso, od a una solida sporgenza di roc-

cia ». La corda deve essere molto tesa e va fissata in modo sicuro, con nodo. Il secondo traversa poi con facilità: si assicurerà con un moschettone, agganciato alla corda di sostegno, ed opportunamente legato alla propria corda di sicurezza.

di tutti e secondo le ultime esperienze moderne. L'edizione attuale non è una semplice riproduzione di quella originaria, perchè il volumetto ha avuto non solo la veste italiana ma, sostituendo i vecchi disegni con dei nuovi di qualità artistica molto superiore e di chiarissima composizione tecnica, anche una veste nuova ed assolutamente perfetta.

E' un'opera unica nel genere in Italia poichè i manuali della S.U.C.A.I., ormai esauriti, pur avendo accenni ed illustrazioni sull'uso della corda, lo trattavano in modo incompleto e certamente antiquato rispetto ai dettami della moderna tecnica alpinistica.

In vendita presso la Sezione di Bolzano del C.A.I.

ROPE MANOEUVRES

Tension traverse for the leader, and rope assisted traverse

Elsewhere in this magazine, specifically where routes in the Kaisergebirge are described, there is a mention of the traversing technique developed by Hans Dulfer, which allows for short horizontal traverses to be overcome which could not be done in any other way.

From Merlet's manual on the subject of "*The Use of the Rope*" (**1**) we have extracted the information that we think may be of interest to our rock-climbers about these manoeuvres.

First and foremost the leader must carry a spare rope, ideally lighter and more flexible than the main one (a braid rope).

When the leader arrives at the departure point for the traverse he climbs upwards for a short way, places a piton to which he clips a karabiner and passes the rope through this exactly as he would for an abseil. The rope passes under his thigh and over the opposite shoulder, with the collar raised to protect his neck (see diagram).

"If the traverse is leftwards, the rope passes round the left thigh, across the chest and over the right shoulder. The other way round if the traverse is to the right. A second piton and karabiner serve as a protection measure".

The leader then descends slightly, and by holding himself in balance with his free hand and pushing with his feet, he can cross a short section of rock which it would be impossible to overcome by any other method.

If the traverse is longer, it will be a good idea to place one or two additional pitons for the safety rope. This will prevent the leader arriving back at the starting point in the event that he loses friction with either his hands or his feet while embarked on the traverse.

"While attaching the safety rope to the afore mentioned pitons, the leader must take care not to allow the weight-bearing rope to become tangled with the safety rope. For this reason he should go beyond the safety pitons before attaching the safety rope to them."

Pendulum traverse

In the event that the rock face to be crossed horizontally is fairly steep and holdless, it may be possible to overcome it by means of a pendulum. (This technique was used for the first time by Herzog and Fiechtl in the Wetterstein).

In this case the piton that is to serve as anchor point for the main rope is placed around 10 to 15 metres above the traverse line. A blocking system must be used to avoid the risk of the body slipping during the manoeuvre. Then a hard push with the feet is given to set off on the pendulum.

Hand over hand rope traverse

Having overcome the traverse the leader then attaches the main rope either to a secure piton or to a firm rock feature. The rope must be in tension and attached securely by a knot. The second then crosses easily, with protection through a karabiner attached to the weight bearing rope and suitable additional protection through the safety rope.

Footnote **1** ***(1931 original translated by Alan Heppenstall 2021)***

"*The Use of the Rope*", a pamphlet edited by the Bayerland E.V. Section of the DCAV of Munich, with an Italian edition produced by Merlet & Co of Bolzano. Translated from the German by F. Terschak of Cortina d'Ampezzo, with drawings and cover by Dr Erwin Merlet of Bolzano.

This is the Italian edition of a pamphlet which is already well known in Germany, Switzerland and Austria, and has become a valuable tool for climbers, both expert and novice. In a few pages it contains all necessary information about the climbing rope and its use on rock and ice, and also about other climbing gear such as rock and ice pitons, hammers, karabiners, etc. It is updated to reflect the most recent expert knowledge available for the benefit of all. The current edition is not just a straight reprint of the original one because it has had added an Italian context, and also because, besides the additional input, the old diagrams have been replaced by new ones of vastly superior quality and the clearest possible technical composition.

It is a piece of work that is unique of its kind in Italy now that the SUCAI (University Section of the CAI) manuals have all been used up. Although these did contain hints and illustrations regarding the use of the rope, the topics were dealt with in an incomplete way, and certainly in a way that was out of step with modern climbing techniques. It is on sale from the CAI Bolzano Section.

The Dülfer technique clearly outlined and described in a 1931 Lo Scarpone article.Even with the advent of carabiners to enable running belay pendulums, many climbers still used the Dülfer traverse.

Representation of Early Women Alpinists (notes)

I often get sidetracked as I write the "Mechanical Advantage" series, my retrospective on the evolution of engineered tools of climbing. As I work with editors, there is often interest in the women mentioned within the historical timeline, whereupon I am asked to expand on their adventures on the wild vertical, but sadly, besides an occasional appearance on the dry first ascents lists published in journals, there is not much further source material on many of these early pioneers. In fact, often in the literature, there often appears to be either a lazy or deliberate effort to ignore or diminish the accomplishments and significant contributions of women alpinists over the past 100 years.

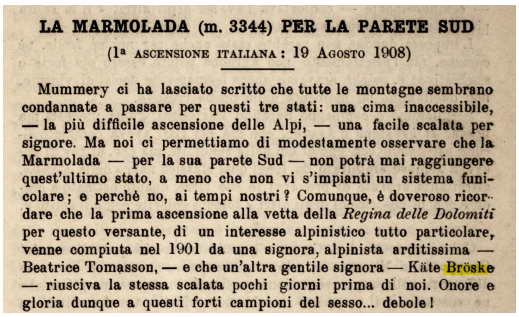
Jump to the 1930s
In the 1930s, fascism was on the rise in Europe, while many talented women got written out of the history books during this

The Sport of Climbing, by Domenico Rudatis. A nine-article series on the early history of the Dolomites published in Lo Sport Fascista, 1930 and 1931- established a version of climbing history that many have followed since.

Tita Piaz and Käthe Bröske, 1908

Käthe Bröske is one of the women pioneers often forgotten in history, even though her accomplishments and abilities were on par or better than many climbers better remembered.

period. Some of the major histories either ignored many women's accomplishments or in some cases actively dismissed them. It is during this time that the celebrated South Wall of Marmolada, first climbed in 1901 by a team organized by a woman and considered a testpiece, like the Nose of El Capitan is considered today, was passed over as a milestone of big wall climbing which led to the first Grade VI's *(see Appendix--1930s climbing histories).*


LA MARMOLADA (m. 3344) PER LA PARETE SUD

(1ª ASCENSIONE ITALIANA: 19 AGOSTO 1908)

Mummery ci ha lasciato scritto che tutte le montagne sembrano condannate a passare per questi tre stati: una cima inaccessibile, — la più difficile ascensione delle Alpi, — una facile scalata per signore. Ma noi ci permettiamo di modestamente osservare che la Marmolada — per la sua parete Sud — non potrà mai raggiungere quest'ultimo stato, a meno che non vi s'impianti un sistema funicolare; e perchè no, ai tempi nostri? Comunque, è doveroso ricordare che la prima ascensione alla vetta della *Regina delle Dolomiti* per questo versante, di un interesse alpinistico tutto particolare, venne compiuta nel 1901 da una signora, alpinista arditissima — Beatrice Tomasson, — e che un'altra gentile signora — Käte Bröske — riusciva la stessa scalata pochi giorni prima di noi. Onore e gloria dunque a questi forti campioni del sesso... debole!

A writeup of the first Italian ascent of the South Wall of Marmolada in 1908 honored the "daring" and "strong champions" Tomasson and Bröske who preceded them (1910 CAI).

The problem with the bias in the 1930s histories is that many others have since then used these published collections of milestones and historical eras, perhaps put into context for the first time, without bothering to look deeper into what was really happening on the scene. By examining and understanding the tools and techniques that climbers were inventing and learning, a better picture arises as to who was using the tools to extend the limits of possible on the rock. Strong clues also arise when considering the who, how, and why they were shared more widely with other climbing areas with other rock challenges, and one climber in particular, Käthe Bröske, a German-Polish climber, was involved with a series of cutting-edge climbs in the first decade of the 20th century but yet, little is known about her.

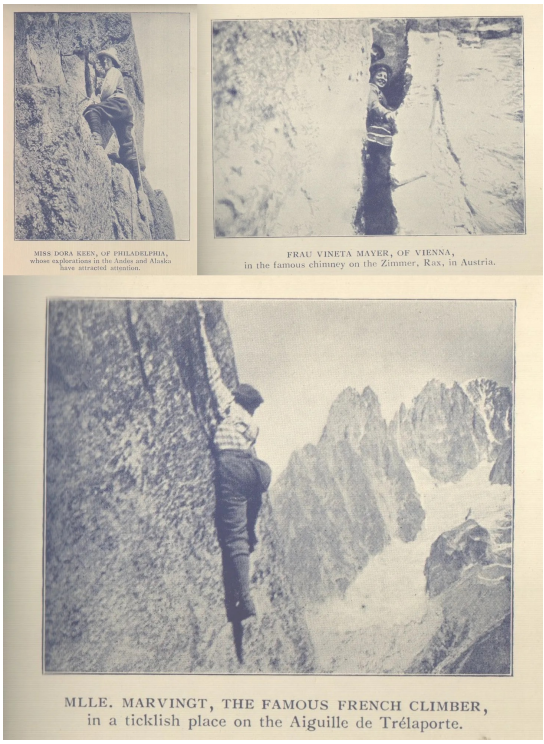
Pre-WWI Representation—a more egalitarian time?

Although climbing breakthroughs were often presented as the domain of men in the literature in the 1930s, with the exception of some legendary climbers who receive brief mentions as contributors such as Jeanne Immink, Rolanda and Ilona von Eötvös, and Vineta Mayer (who was also the mother of leading pioneers in the 1910s). Some pre-WWI literature, on the other hand, provides a different sense of the gender atmosphere.

Jeanne Immink. Two towers in the Dolomites are named after her: Cima Immink and Campanile Giovanna (Jeanne's Tower).

One 1911 book, in particular, devotes a whole chapter on women alpinists. In *How to Become an Alpinist,* Frederick Burlingham includes, "among the galaxy of women alpinists": Fanny Bullock Workman, Annie Peck, Margherita Maria Teresa Giovanna, Henriette d'Angeville, Marie Marvingt, Elizabeth Hawkins-Whitshed (also known as Aubrey Le Blond), Anna and Ellen Pidgeon, Vineta Mayer, Dora Keen, Eleonore Noll-Hasenclever, Madeline Namur, Constance Barnicoat, Mizzi Wolf, Katharine Richardson, Maria Preobrajenska, Mary Paillon, Vail, Maige, Léontine, von Reppert, Elsbeth (first names unknown), Rose Friedmann, Anna Zalaudek, Marie Weiler, Margarete Grosse, Jeanne Immink, and Käthe Bröske.

Burlingham's coverage was focused more on the pioneers of alpine climbs in the western Alps, but also includes several of the leading rock climbers in the pre-WWI era.


MISS DORA KEEN, OF PHILADELPHIA,
whose explorations in the Andes and Alaska have attracted attention.
FRAU VINETA MAYER, OF VIENNA,
in the famous chimney on the Zimmer, Rax, in Austria.
MLLE. MARVINGT, THE FAMOUS FRENCH CLIMBER,
in a ticklish place on the Aiguille de Trélaporte.

Climbers in Burlingham's, "How to Become an Alpinist," 1911

Käthe Bröske

One woman little known today, in particular, is Käthe Bröske (1870-1929), whose climbs with Tita Piaz on some hard first ascents of Dolomite spires are recorded, including:

- **Pala del Larjé, per Parete Est, 450m**
- **NE Torre Winkler.**
- **Two first link-up traverses on the Vajolet Towers.**

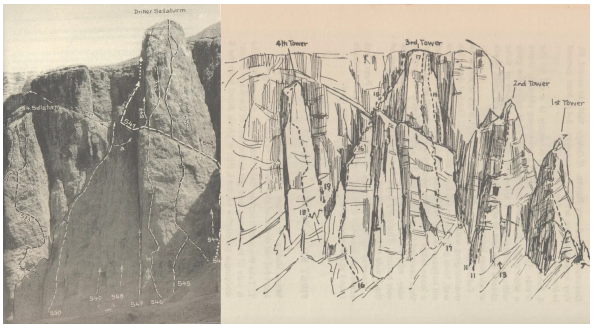
According to Piaz, "all the mountain guides" celebrated the first traverse of six Valolet summits "with the most sincere joy, through a legion of bottles of Champagne" in the Vajolet rifugio. What a rock climbing playground the area around the Vajolet Towers were for Piaz and Broske and Rudolf Schietzold must have been with advanced technical and free climbing skills; few if any climbers at the time could repeat the adventures as efficiently and in such fast times, demonstrating their confident skills and teamwork moving on difficult rock.

Bröskë was from the Tatras, where she had done many first ascents. Piaz called her, as a compliment, "crazy in the high mountains." She also climbed:

- **Third Sella Tower NW Ridge (560m) with Mr. Haberlin, 1906**
- **Punta Fiames SE Arete (580m) with Mr. Jori, 1909**

Both routes are now named only after the 'misters'; perhaps they were the sole lead, but doubtful when considering the nature of these climbs.

There are a few bits and pieces on Bröskë here and there, brief mentions in the journals, such as in the 1911 CAI journal: *"KATHE BRÖSKE, the distinguished mountaineer, gives report of the first ascent of the Pala that bears her name (Larsec group in Val di Fassa), and the direct traverse of all six Vajolet Towers."* (The Pala route does not seem to appear in any of the older Dolomite guides, but I was able to track down a 1909 report written by Bröskë).



Bröske and Haberlin's NW ridge route on the Third Sella Tower (left #550, right #16). Source: Dolomites West, Alpine Club Guide Books, 1963, Sella-Langkofel, Geodeke, 1996. A dangerous route climbed in 1906 and was certainly a long testpiece of the time.

CLUB ALPINO ITALIANO 353

di strapiombi, di
o e tagliati acu-
anini, di effetto
alpinisticamente
da volta giun-
o tardi, era mez-
ntare seriamente :
alla gran conca,
e si doveva pas-
i restò altro che

bel gruppo del
erso S. con una
uno dei più bei
di Cortina, ca-
e per le lunghe
Croda Longese e
a parete è volta
entandosi liscia,
ll'ultimo tratto,
ucido e brillante.
otto la Testa di
Pomagagnon (in
svolgono le vie
rschak) offrendo
, circa 600 m. ;
e con un angolo
l'altra più stretta
SE., che appare
ati sotto le crepe
Pomagagnon si
slanciato e al-
parete la Croda
Pomagagnon e
le due cime pre-
aspre balze for-
teatri dalle rocce

(*Neg. A. Zardini*).

La Punta Fiammes: parete S.

... + + + Via Heat-Dimai-Verzi.
----- Via Jori-Bröske per la parete S. e lo spigolo SE.
+ + + --- Via Castiglioni-Gilberti diretta per lo spigolo SE.

The route originally known as the "Jori-Bröske", first climbed in 1909, is now just known as "Spigolo Jori".

It becomes obvious with a bit of digging into the old journals that Bröskë was one of the top climbers in the first decade of the 20th century, with probably hundreds of hard climbs never reported.

Bröskë also did an early ascent of Tomasson's climb on Marmolada. No comprehensive article exists that tells her story, like many others, who by all accounts were equal partners on their climbs (Irma Glaser, also a Piaz partner, is another mystery). Bröskë was also a photographer who captured some of iconic images of the era, including some in Guido Rey's works.

ÖAZ 1909 — 136 —

sehr vorsichtig zu überklettern sind. Durch eine brüchige Rinne zu einem kleinen Sicherungsblock kolossale Exposition inmitten senkrechter Abstürze. Hier endet das Band unvermittelt in der Wan... Gerade 8 Meter empor auf den Grat, anfangs überhangend, dann senkrecht äußerst schwierig zur Schulter des Turmes und 4 Meter hinab in eine schöne Scharte (2 U. 15).

Über den sich stark verbreiternden Grat leicht empor wieder zu einer markanten Scharte. Der nächsten überhangenden Zacken rechts leicht umgehend und weiter rechts über geröllige Schrofen zu dem anfangs erwähnten östlichen Pfeiler. Über einen schuttbedeckten Rücken zum Treffpunkt der beiden Grate (Holzpflock und Steinmannd! vorgefunden). Leicht weiter zu einem unersteiglichen Turm... 10 Meter vor ihm in die äußerst brüchige rechte Flanke (Kletterschuhe). Drei Seillängen sehr schwer und exponiert — zuerst horizontale, dann etwas ansteigende Traverse — zu einer ausgesprochenen Plattenwand. Über sie gerade hinauf — exponiert und brüchig, ohne Sicherung — zur Höhe des Turmes (4 U. 30). Leicht über Erosionsplatten und Geröll zur Scharte rechts vom felsigen Gipfel. Bei zunehmender Dunkelheit über das Plateau auf den Hochkönig (6 U.).

Langandauernde und schwere, landschaftlich prächtige und eindrucksvolle Hochtur. Ungefähre Grathöhe 700 Meter.

Richard Gerin, Wien.

Fassaner Dolomiten.

Pala Käthe Bröske (etwa 2745 m). I. Ersteigung am 17. August 1908.

Dieser von meinen Begleitern so benannte Felsturm befindet sich in der Larsecgruppe südlich vom Gran Cront. Nachdem wir — Führer G. B. Piaz (Perra), Herr Rudolf Schietzold (München) und ich — den Weg von Perra nach der Vajolethütte ungefähr eine kleine Stunde verfolgt hatten, stiegen wir nach rechts durch Wald und über steile Almwiesen der Pala entgegen. Zwischen derselben und dem Gran Cront zieht eine Schlucht herunter, die unten rechts (im Sinne des Aufstieges) von einem Turme flankiert ist. Gegenüber diesem Turme ist der Einstieg, ungefähr 30 Meter südlich einer Quelle. Wir erkletterten einen brüchigen roten Kamin, dem eine kurze Traverse folgt, die zu senkrechten Wandstufen führt. Über diese kletterten wir etwa 125 Meter hoch empor und kamen dann zu einem 5 Meter hohen, schiefen Kamin, nach welchem wir auf eine kleine Terrasse gelangten. Nun einige Meter leicht zu einem kaminartigen Spalt (5 Meter) und auf eine große geröllerfüllte Terrasse. Von hier etwas nach rechts an der schrofenartigen Kante empor zu einem roten, brüchigen Riß, der nach links sehr schwer, zum Schlusse überhangend, emporzieht. Aus der offenen Rinne, die nun folgt, nach links die Wand gerade aufwärts und dann einige Meter nach rechts in einen kleinen, 4½ Meter hohen Kamin; aus diesem auf eine kleine Terrasse. Jetzt wandten wir uns links einem Risse zu. In ihm 35 Meter gerade hinauf bis zu einem Überhang, auf welchen eine seichte Rinne folgt, die uns zum gelben Gipfelabbruch führte. Da es unmöglich war, den sich oberhalb senkrecht fortsetzenden Riß zu erreichen, wandten wir uns auf einem Grasbande etwa 8 Meter schräg nach links aufwärts und gelangten nun auf einer sehr schweren Traverse nach rechts wieder in den Riß und durch ihn zum Gipfel. Kurz vorher befindet sich eine originelle Stelle: der Riß ist durch einen Überhang verschlossen; ein seitlich befindliches Loch, welches das Verlassen des Risses erlaubt, kann aber vom Ersten nur derart passiert werden, daß er mit den Füßen voraus sich über den Überhang hinausschiebt. Man verfolgt nun wieder den Riß bis zur Scharte, und von dieser gelangt man über brüchiges Gestein auf den Gipfel. Die Durchkletterung der Wand vollzieht sich vom Einstieg bis zum Gipfel in fast lotrechter Linie und erforderte 4½ Stunden.

I. vollständige, direkte Überschreitung aller sechs Vajolettürme (Delagoturm—Stabelerturm—Winklerturm [Abstieg Nordostwand I]—Hauptturm [Aufstieg Südwestwand, Abstieg Südostwand]—Ostturm [Aufstieg Südostwand II, Abstieg Nordwestwand]—Nordturm [Aufstieg Nordwestwand, Abstieg Südostwand]) am 21. August 1908.

I. Überschreitung des Winklerturmes nach Nordosten. Führer G. B. Piaz-Perra, Herr Rudolf Schietzold-München und ich verfolgten bis kurz oberhalb des Winklerrisses die gewöhnliche Route, machten dann eine Traverse nach links und kamen — bereits auf der Nordostkante (Mauerhaken mit Ring) — zu einer 4 Meter langen Abseilstelle. Wir gelangten dann zu einem Vorbau. Auf die Spitze desselben hinauf und jenseits hinunter auf eine breite, blockerfüllte Terrasse. Diese noch etwa 4 Meter abwärts, bis der Absturz den Weg hemmt. Jetzt auf einem schmalen Geröllbande nach links zu einem versteckten Riß in der steilen, überhangenden Nordostwand (Seilringe, Mauerhaken). Es folgt eine etwa 35 Meter lange, freie Abseilstelle auf ein Band, welches vom Ersten mittels Pendeln erreicht werden muß. Das Weiterkommen ist hier vollkommen ausgeschlossen (Mauerhaken mit Eisenring). Das Seil wird straff durch den Ring gezogen, wodurch dem Nachkommenden die Möglichkeit gegeben wird, auf einem etwa 4 Meter höher gelegenen Postament zu landen, wohin der Erste mittels Seilhilfe zurück hinauf muß. Links von dem Postament in einem ansetzenden kurzen Riß gute Versicherung. In diesem Riß nun einige Meter leicht hinunter auf einen Schuttplatz. Von diesem wiederum einige Meter relativ leicht durch einen brüchigen Kamin etwa 15 Meter hinab (Mauerhaken). Jetzt etwa 45 Meter lange Abseilstelle auf die Schrofen kurz über der Winklerscharte und über die Schrofen zur Scharte selbst.

Frau Käthe Bröske, Zabrze.

1909 report in the Österreichische Alpen-Zeitung by Bröske (thanks to A.Mokmojs at Österreichischer Alkpenklub)

Katharinenspitze, named after Käthe Bröske, in the Tatra Mountains (Tatry, Karpaty), 2412m. First Ascent: .Katherine Bröske, Maximilian Bröske, Johann Hunsdorfer jr., Johann Hunsdorfer sn., September 4, 1902

more Bröske routes

Full Translation of Käthe Bröske's 1909 Österreichische Alpen-Zeitung report

Pala Käthe Bröske (ca 2745m).
Climb on 17. August 1908.
This rock tower, so named by my companions, is located in the Larsen group south of the Gran Cront. After we, our guide G.B. Piaz (Perra), Mr. Rudolf Schietzold (Munich) and I - had followed the path from Perra to the Vajolet hut for about a small hour, we climbed to the right through forest and over steep alpine meadows towards the Pala. Between the same and the Gran Cont, a gorge descends, flanked by a tower at the bottom right (in the sense of the ascent). Opposite this tower is the entrance, about 30m south of a spring. We climbed a brittle red chimney followed by a short traverse leading to vertical wall steps. over this we climbed about 125 meters high and then came to a 5 meter high, crooked chimney, after which we reached a small terrace. Now a few meters slight to a chimney-like gap (5 meters) and on a large rubble-filled terrace. From here a little to the right on the rugged edge up to a red, brittle crack, which pulls up to the left very heavy, at the end overhanging. On the open channel that now follows, to the left the wall straight up and then a few meters to the right into a 4.5 meter high chimney; from this to a small terrace. Now we turned to a fissure on the left. In it 35 meters straight up to an overhang, on which follows a shallow gully, which led us to the yellow summit break. Since it was impossible to reach the crack that continued vertically above it, we turned on a grass band about 8 meters upwards to the left and now reached on a very heavy traverse to the right again in a crack through it to the summit. Shortly before there is an original place: the crack is closed by an overhang; however, a laterally located hole, which allows leaving the crack, can only be passed by the first in such a way that he pushes with the feet ahead, over the overhang. You now follow the crack again to the Scharte, and from there you reach the summit via brittle rock. The climbing of the wall takes place from the entrance to the summit in an almost perpendicular line and required 4.5 hours.

Complete, direct crossing of all six Vajolet towers (Deragoturm-Stabelerturm-Winklerturm [descent northeast wall] - Hauptturrn [ascent southwest face, descent southeast wall] - East Tower [exit south wall II, descent north wall] - North Tower [ascent northwest wall, descent south wall]) on 21 August 1908.
Crossing the Winklerturm to the northeast. Guide G.B. Piaz-Perra, Mr. Rudolf Schietzold-Muenchen and I followed the usual route until shortly above the Winklerriss, then made a traverse to the left and came - already on the northeast edge (wall hook with ring) - to a 4 meter long abseiling point.
We then arrived at a porch. Up to the top of the same and down to the other on a wide, block-filled terrace. This is still about 4 meters off until the drop off inhibits the way. Now on a narrow geroellbande to the left to a hidden crack in the steep, overhanging northeast wall (rope rings, wall hooks), It follows an approximately 35 meter large, free abseiling point on a band, which must be reached from the first by traversing. Progress is completely prohibited here (wall hooks with iron ring). The rope is pulled tightly through the ring, giving the descendant the opportunity to land on a postament about 4 meters higher, where the first has to go back up by means of rope assistance. To the left of the postament in a short crack with good security. In this crack now a few meters slightly down to a rubble place, from this again a few meters relatively easily through a brittle chimney about 15 meters down {wall hook). Now about 45 meters long abseiling point on the Schrofen shortly above the gap on the Winkler route (Winklerscharte) and over the cliff Schrofen to the gap (Scharte) itself.
Ms. Kathe Bröske, Zabrze. (1909 Österreichischer Alkpenklub)
(thanks to Phil Ziegler for help with translation)

Schrofen

From Wikipedia, the free encyclopedia

Schrofen, a German mountaineering term, is steep terrain, strewn with rocks and rock outcrops, that is laborious to cross, but whose rock ledges (*schrofen*) offer many good steps and hand holds. It is usually rocky terrain on which grass has established itself, but it can also refer to purely rocky slopes. *Schrofen* are found especially where the rock has broken off against its angle of dip.

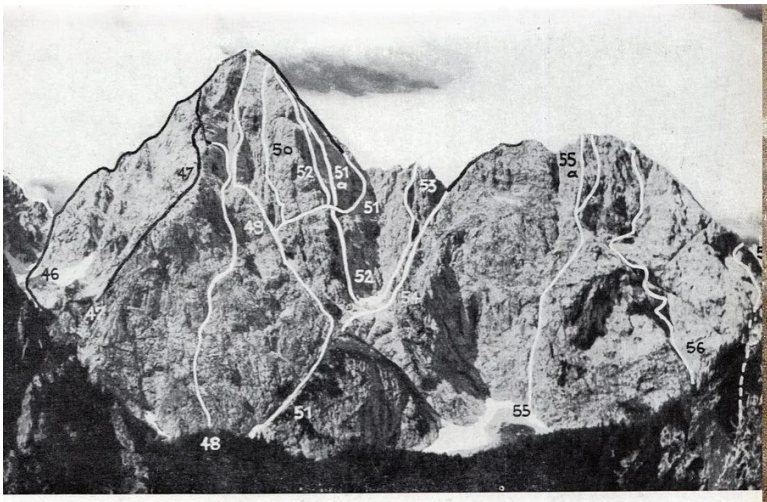
Schrofen differs from trackless terrain in that hands are needed in order to negotiate it. Often there are route markings that only indicate a rough direction.[1]

Schrofen terrain requires at least sure-footedness and is typical of grade I climbing routes. In wet weather *schrofen* can become very dangerous because of the increased risk of slipping, particularly in the descent. In addition, the risk of falling in *schrofen* terrain is often underestimated.

In keeping with the base meaning of the word ("rock spikes"), *schrofen* also forms part of the name of numerous mountains in the Northern Limestone Alps. Alpine farms near a *schrofen* are often named after it, as are their access roads, e.g.: *Ob dm Schrofa, Schrofaweg*. The word is linked to the German adjective *schroff* which means rugged, steep or craggy.

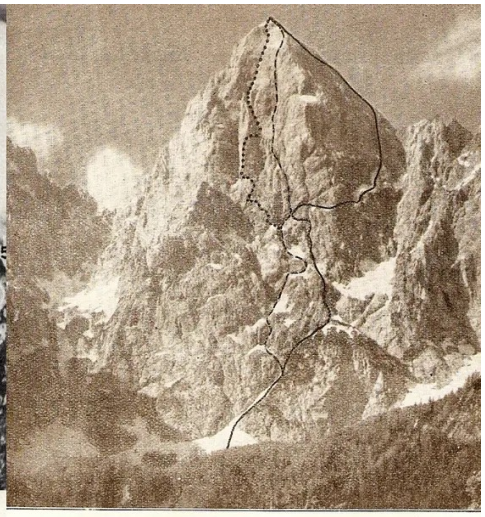
Schrofen terrain

Caption



Sl. 24: **ŠPIK in FRDAMANE POLICE** — severovzhodno ostenje

ŠPIK: 346 Špikov graben, 347 Cizljeva smer, 348 Krušičeva smer, 349 Skalaška smer, 350 Direktna smer, 351 Dibonova smer, 351a Varianta Krivic-Potočnik, 352 Smer Debelak-Deržaj-Šumer, **VRŠIČ V ŠKRBINI:** 353 Severovzhodni raz, **FRDAMANE POLICE:** 354 Smer Jesih-Potočnik, 355 Schinkova smer, 355a Varianta, 356 Libereška smer, 357 Arihova smer

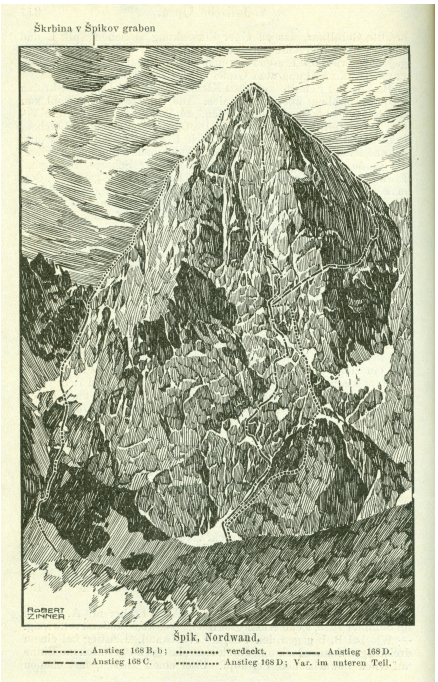


Dibonova smer
Severna stena Špika (Pibernik — Tominšek)
»Skalaška smer« (Jesih — Lipovec)

Mira Marko Debelak and Stanko Tominsek 1926 Direktna route on Spik (Trigav National Park) in the Julian Alps is one of the great alpine big walls of the era (aka Pibernik-Tominsek).

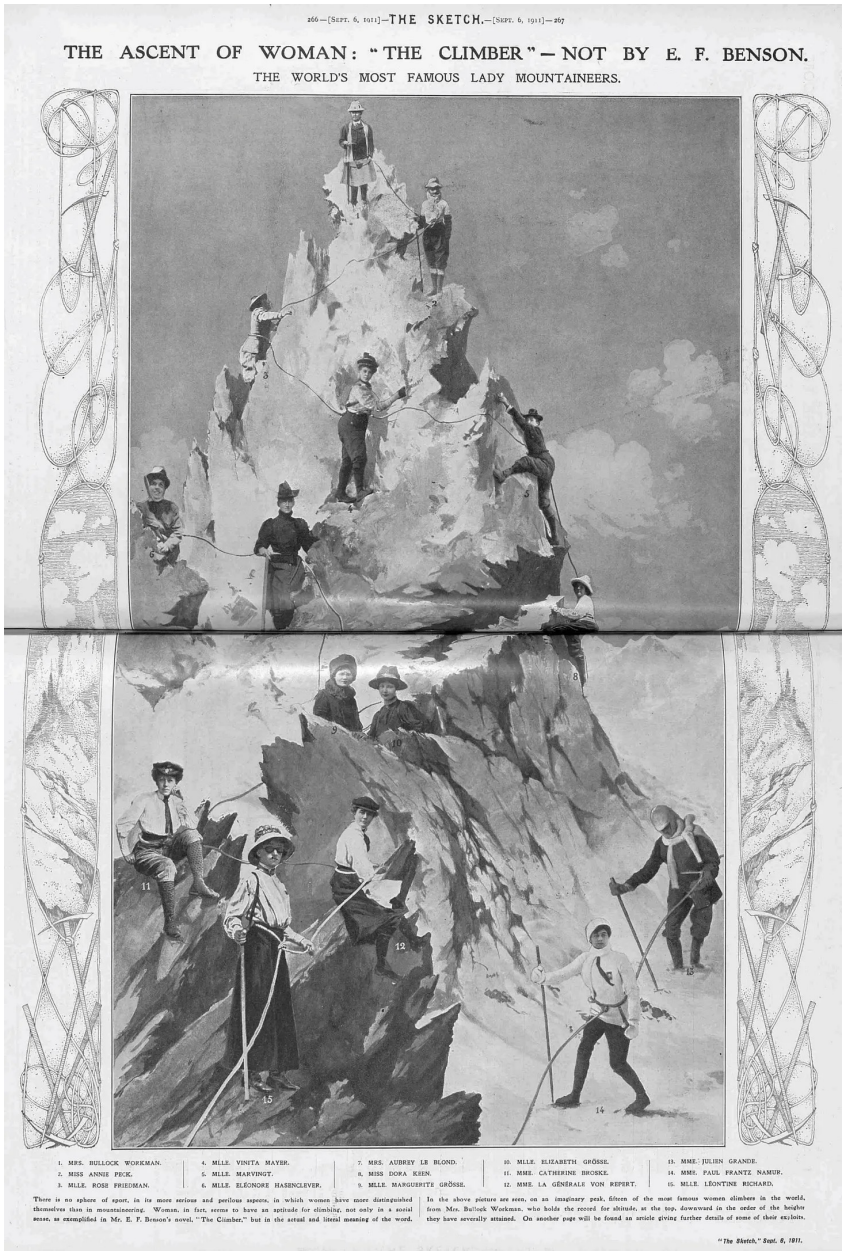
More notes on big wall/Grade VI pioneers: Another intriguing climber is Mira Marko Debelak (aka Pibernik), who in 1926 climbed a direct route on the north wall of Špik with Stanko Tominšek, which certainly would have been on par with the most challenging mixed wall and alpine routes being climbed at that time, using the latest innovations in climbing equipment.

More climbers of the early to mid big wall period appear in the innovation story, some only briefly mentioned and with very little info, some best known for mountain routes, and some only recently researched. Current knowledge could be easily be extended with many more stories of climbers who deserve more research. In short, though it is sometimes difficult to find primary source material or historical progression articles on many of the pioneering women rock climbers, it is possible to delve a bit deeper from brief references, by using varied source material and carefully considering the climbs and the ability and tools required to climb them. In addition to climbing inspiring routes, many women were also clearly involved in developing and refining new techniques, and sharing such knowledge to other areas, so this initial research serves as notes as reference and to keep updating as more clues surface on the pioneers in the story of visionary lines climbed with lightweight tools. *A work in progress…*



Špik, Nordwand,
Anstieg 168 B, b; verdeckt, Anstieg 168 D.
Anstieg 168 C. Anstieg 168 D; Var. im unteren Teil.

Also note the 1925 Anna Escher and Angelo Dibona route (topo from 1930).



266.—[Sept. 6, 1911]—THE SKETCH.—[Sept. 6, 1911]—267

THE ASCENT OF WOMAN: "THE CLIMBER"—NOT BY E. F. BENSON.

THE WORLD'S MOST FAMOUS LADY MOUNTAINEERS.

1. MRS. BULLOCK WORKMAN.
2. MISS ANNIE PECK.
3. MLLE. ROSE FRIEDMAN.
4. MLLE. VINITA MAYER.
5. MLLE. MARVINGT.
6. MLLE. ELÉONORE HASENCLEVER.
7. MRS. AUBREY LE BLOND.
8. MISS DORA KEEN.
9. MLLE. MARGUERITE GRÖSSE.
10. MLLE. ELIZABETH GRÖSSE.
11. MME. CATHERINE BROSKE.
12. MME. LA GÉNÉRALE VON REPERT.
13. MME. JULIEN GRANDE.
14. MME. PAUL FRANTZ NAMUR.
15. MLLE. LÉONTINE RICHARD.

There is no sphere of sport, in its more serious and perilous aspects, in which women have more distinguished themselves than in mountaineering. Woman, in fact, seems to have an aptitude for climbing, not only in a social sense, as exemplified in Mr. E. F. Benson's novel, "The Climber," but in the actual and literal meaning of the word.

In the above picture are seen, on an imaginary peak, fifteen of the most famous women climbers in the world, from Mrs. Bullock Workman, who holds the record for altitude, at the top, downward in the order of the heights they have severally attained. On another page will be found an article giving further details of some of their exploits.

"The Sketch," Sept. 6, 1911.

1911 'The Ascent of Woman' illustrations from the British periodical, The Sketch (September 6, 1911). Left from top as originally captioned: 1. Mrs Bullock Workman 2. Miss Annie Peck 3. Mlle Rose Friedman 4. Mlle Vinita Mayer 5. Mlle Marvingt 6. Mlle Eleanor Hasenclever 7. Mrs Aubrey Le Blond 8. Miss Dora Keen. Right from top: 9. Mlle Marguerite Grösse 10. Mlle Elizabeth Grösse 11. Mme Catherine Broske 12. Mme La Générale Von Repert 13. Mme Julien Grande 14. Mme Paul Frantz Namur 15. Mlle Leontine Richard

More links and outlines on bigwallgear.com. Sources, CAI (Italy), SAT (Italy), SAC (Swiss), AJ, AAJ, NZAJ, CAJ (Canada), Mitteilungen und Zeitschrift (Germany/Austria).

Delving into written climbing histories, most perpetrate a theme where women are often portrayed as minor players, if not ignored entirely. But when you look a little closer, women climbers have been at the top of the game in every major period of climbing and mountaineering history. Some are recognised, perhaps for achievements such as the first "female" ascent of Mont Blanc, but many are not. It is true that until recently, that there have generally been far more men involved with climbing pursuits than women, but that is a factor of opportunity, not capability, skill, expertise, or boldness.

Betty Woolsey and Paula Wiessinger

210 THE ILLUSTRATED SPORTING AND DRAMATIC NEWS. APRIL 4, 1914.

THE SPORTSMAN'S LIBRARY.

engravers, and had never been photographed. English crag-climbers, I believe, would find here their paradise." But alas! after description of an excellent dinner, good wine and cigars, one finds the party taking out 600 feet of rope, fourteen of which the guides ate over rocky summits. Then the photographer and his friend are anchored in the snow-slope, and the rope is cut so the snow to fall less densely on that the camera may come into use.

The author is interesting in his descriptions of the Mont Blanc area, which he knows well. He has apparently not been blessed with a full monitory of fine weather and good conditions for his labours, and one has a feeling of wonder that after so many trials and misjudgments, he should have survived to write the final chapter, "How to get killed among the Alps." One likes his personal experiments in that direction much better than his printed precepts.

Mr. Ellis Stevens's "Mountaineering," in the Badminton "Mountaineering," a book full of sage, tested, and helpful advice, nor can it be compared for literary style with Whymper's "Scrambles," or Mummery's "My Climbs." Lacking both strength and grace, it is yet an interesting little work.

"A CLIMBER IN NEW ZEALAND."

Any mountaineering work with a prefatory note by the Right Hon. Viscount Bryce, O.M., is sure of a welcome. Mr. Malcolm Ross's quod wins really has no need for such back. In a few apt sentences the Viscount sums up the climbing history of the New Zealand Alps, pointing out that a 10,000 feet peak there carries as much snow and ice as one of 15,000 feet in the Swiss Alps. New Zealand climbing began with the ascents of outlying peaks by Mr. Fitzgerald and party on voyage in 1882, and early expeditions with Alpine guides were made by the Rev. W. S. Green and Mr. E. A. Fitzgerald. Most of the pioneering has been done by New Zealanders, who in their enthusiasm have developed a race of their own route-finders, guides, and porters. "Among these native mountaineers," writes Viscount Bryce, "Mr. Malcolm Ross has been one of the most daring and persevering. . . . Mr. Ross's contribution to the years of arduous climbing has left the New Zealand Alps without an important virgin peak, and without a death roll.

Mr. Ross commences with a lively description of the arduous life led in the mountains, which are so different nowadays. "There is a story current—and it is quite a true one—of two tourists who finished a four-course wine dinner at the Ball Glacier Hut with black coffee and cigars, after which, owing to the unusual surroundings, remarked quite seriously to his companion, 'But Jove! W. are roughing it, aren't we!'" The author gives keen descriptions of ice-fall and avalanche, and of what are modestly called "step-cutting" in the pages one reads of the first ascent of Aoraugi or Mount Cook, where for days the climbers were storm-bound on the insecure top of a great spur of snow and ice. Mr. Ross, however, did not share in the final triumph, though he ably helped to make it possible. The final section deals with a great mountaineering feat, the crossing or traverse of Mount Cook, but as this record could only be done justice to by quoting every word, I must refer the reader to the book itself.

The author has most with nothing but praise in this. Mr. Ross is no sensationalist, but on the other hand he does not skip or gloss over dangers and difficulties and sight corners. And, above all, he writes so modestly that one can always feel a firm admiration for the author's skill and courage as he places beside the historic volumes by Green and Fitzgerald on mountaineering under the Southern Cross.

"AYRES' LAWN TENNIS ALMANACK, 1914."

In spite of its lack of support by our public schools, the game of lawn tennis has become so popular that no doubt the latest issue of Ayres' Almanack, which has nearly doubled in size since the first issue seven years ago,

(To page 214.)

"HOW TO BECOME AN ALPINIST."

Mr. Bedlington is to be known to fame as the man who cinematographed the Matterhorn, Mont Blanc, and other Alps, and showed in their way interesting performances—and somehow all through his little volume one is never allowed to forget this. There are even pictures showing a sturdy porter marching along at ease on the high snows, while Mr. Bedlington is assumably some essential part of the photographic machine.

After certain preliminary chapters of advice Mr. Burlingham deals with several climbs, chiefly in the French Alps—some guideless, like the attempt to ascend Mont Blanc by the Brenva route, curiously brief description, so that it is not possible to judge their relative difficulty. "We decided, if it proved possible," writes Mr. Burlingham, "to do the Chcheton because they had been climbed only once before, were attracting considerable attention from

A well-known German Alpinist.—Frau Käthe Brösler, of Zehrer Pressnitsch Schlesien.

(From "How to Become an Alpinist," by Frederick Burlingham. London: T. Werner Laurie, 6s. net.)

Mrs. Wallis,
the Welsh Covered Court Lawn Tennis Champion.

(From "Ayres' Lawn Tennis Almanack and Tournament Guide, 1914," edited by A. Wallis Myers. London: F. R. Ayres, Ltd., 1s. 6d.)

The Summit of the Matterhorn.

(From "How to Become an Alpinist," by Frederick Burlingham. London: T. Werner Laurie, 6s. net.)

E. Morwell,
Winner of Ninths of England Lawn Tennis Silver Cup, 1913.

(From "Ayres' Lawn Tennis Almanack and Tournament Guide, 1914," edited by A. Wallis Myers. London: F. R. Ayres, Ltd., 1s. 6d.)

Crevasse on Tasman Glacier.

(From "A Climber in New Zealand," by Malcolm Ross, A.C., F.R.G.S. London: Edward Arnold, 10s. net.)

Crossing the Hooker.

(From "A Climber in New Zealand," by Malcolm Ross, A.C., F.R.G.S. London: Edward Arnold, 10s. net.)

Image © Illustrated London News Group

Mary Varale with Riccardo Cassin in 1931. Varale climbed the east and west walls of Guglia Angelina, and introduced Cassin to Comici.

Margherita Rita Graffer (1911-1995), one of the boldest free climbers in the 1930s. Graffer was one of Tita Piaz's top three heroes (along with Winkler and Preuss), who "quietly accomplished" the hardest climbs and "deserves a chapter of her own".

THE SKETCH. SEPT. 6, 1611

FAMOUS WOMEN CLIMBERS.

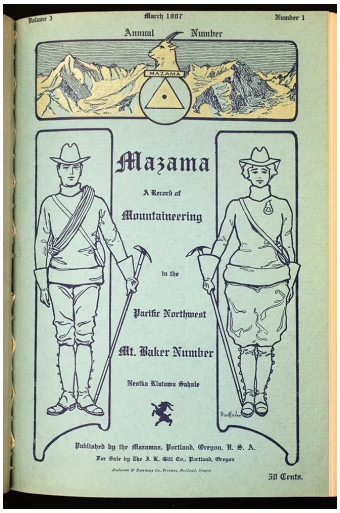
(See Illustrations.)

OF the distinguished women climbers who appear in our double-page illustration in this number, the famous American traveller, Mrs. Bullock Workman, holds the world's record for women in altitude by her ascent of one of the Nun Kun peaks—23,300 feet—in the Himalayas in 1906. With her husband, Dr. W. Hunter Workman, she has made many other ascents, in the Himalayas and other ranges, of almost equal magnitude. Miss Annie Peck, another American Alpinist, runs her countrywoman close by her Himalayan exploits. Among other feats she made the first ascent of Huarascan, a height of about 21,800 feet. Several Frenchwomen have achieved fame in mountaineering. Mlle. Marvingt, of Nancy, has done many fine climbs, her greatest exploit being the crossing of the Grands Charmoz and the ascent of the Grépon in one expedition lasting eighteen hours, with the guides Edward and Gustave Payot. Only on two other occasions has this feat been accomplished, and never before by a woman, for the Grépon has the grim reputation of being one of the most difficult and dangerous peaks in Europe. Mme. P. F. Namur, who is the daughter of the eminent French savant, M. G. Vallot, has twice ascended Mont Blanc, and Mlle. Léontine Richard, of Paris, is another daring French mountaineer. One of the leading British women climbers is Mrs. Aubrey le Blond, President of the Ladies' Alpine Circle, and author of much literature on her favourite sport. She is an Irishwoman, the only child of the late Sir St. Vincent Whitshed, Bt., of County Wicklow, and she has been thrice married, her first husband having been the famous Colonel Fred Burnaby. New Zealand has produced a daring woman climber in Miss Constance Barnicoat, who a few months ago married M. Julien Grande, a well-known Swiss alpinist, with whom she had achieved the perilous ascent of the Grand Schreckhorn—the "pic du terreur" of the Bernese Oberland.

The pioneer of women climbers was Mlle. d'Augeville, who ascended Mont Blanc nearly a hundred years ago. Other famous *grimpeuses* were the sisters Pigeon, who negotiated the terrible Sesia Joch. Honour is also due to Mme. Paillon, who climbed Mont Blanc in a snowstorm at the age of sixty-one, and even in her seventy-sixth year was making difficult climbs near Grenoble. Her footsteps are worthily followed by her daughter, Mlle. Marie Paillon.

TO ARTISTS, AUTHORS, AND PHOTOGRAPHERS.

Source: British Newspaper Archives (1911)



1907 cover of the Mazama journal. The American Alpine Club, founded in 1902, was also quite inclusive in the pre-WWI era, with four woman founders including Workman and Peck.

1907: 'Modern HighTourists' (mountaineers). Ilona and Rolanda Eötvös, Maud Wundt, Fanny Bullock Workman in the corners. Vineta Mayer portrait lower right center.

LO SCARPONE

Altre interessanti ascensioni

La signora Mary Varale, la consorte del noto giornalista di Milano, con la guida Silvio Agostini fece nell'agosto scorso il Campanile Basso per la via Fehrmann-Smith; il Croz del rifugio per la direttissima e la Cima Margherita per la parete Sud-Est. Con le guide Vidi e Chesi il Castelletto inferiore per la via Kien. E' anzi la prima donna che abbia compiuto questa scalata. Infine da sola, effettuò la scalata alla Cima piccola di Lavaredo.

• • •

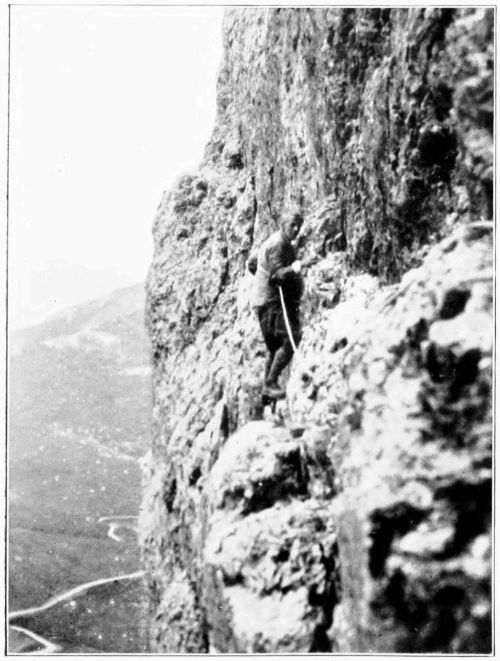
Il 6 corrente gli alpinisti trentini Adriano Dallago (il noto atleta dell'Unione Ginnastica), la signorina Gemma Callieri ed il dott. Leo Seiser, riuscirono pure a raggiungere, senza guide, la vetta del Castelletto inferiore di Vallesinella al Tuckett.

La via seguita fu quella chiamata «Kiene», su una parete di oltre 200 metri, che venne superata in meno di quattro ore. La signorina Callieri, dopo la signora Mary Varale, è la seconda donna che ha compiuto la via « Kiene ».

Il 30 agosto, quattro cordate italiane composte di undici alpinisti compirono l'ascensione del Campanile Basso per la via Fehrmann-Smith. Per la prima volta questo itinerario venne compiuto da un numero tanto rilevante di alpinisti e di cordate nello stesso giorno. Con ciò vennero portate a 483 le ascensioni del Campanile Basso (32 per la via Fehrmann-Smith, in maggioranza di italiani). Tre anni fa la maggioranza era di stranieri.

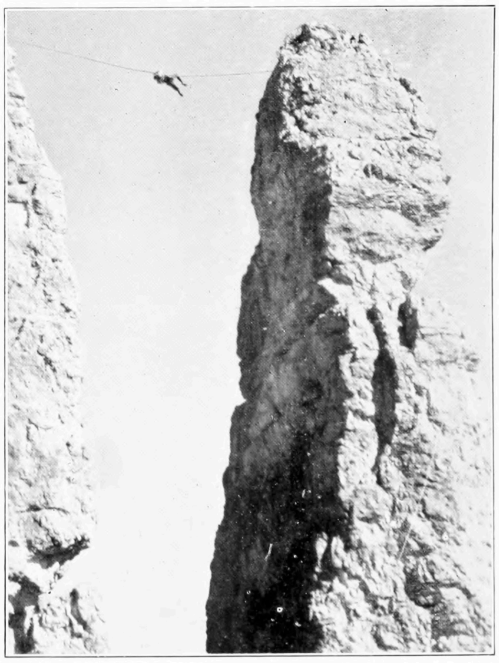
Va notato in genere, per quanto ha tratto alle Dolomiti, che il tempo è stato piuttosto brutto anche lassù e l'attività ne venne ostacolata non poco.

"more interesting ascents", 1931



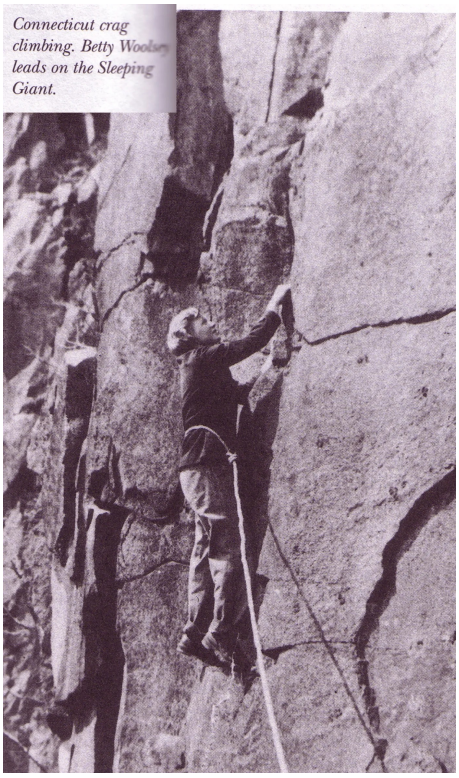
E. Mann

THE TRAVERSE ON THE 3D SELLA



GUGLIA DE AMICIS

Lilian Bray,
Pinnacle Club Journal



Connecticut crag climbing. Betty Woolsey leads on the Sleeping Giant.

There is now no doubt of women's contributions to big wall climbing. Two of the greatest big wall climbers of all time; Silvia Vidal and Catherine Destivelle.

Before we get into the 1920s, let's consider a Emil Solleder (1899-1931) quote from the era:

"I recognize well that the pure technique of climbing after Dülfer has made no progress. Rope maneuver and rope, and if today we go to an extreme limit, technically everything remained as in the past. The nail technique is the itself; according to the training the climber will resist more long in the awkward places requiring a nail, and so on until it is exceeded; the less trained climber will have to do without nail or fix it with a badly planted one. It is time however of the there is no doubt that in the present era ascents were possible much better. It is a fact that new ascensions have succeeded in the recent years, such as the Fiechtl-Weinberger route at Predigtstuhl, the south-east face of Fleischbank, north face of Furchetta, la north-west face of the Civetta present even greater difficulties than the latest new ascents of the pre-war years. I attribute however, the success of these very modern climbs is not a one any improvement of the technique but only to a changed one psychic attitude of the performers. And let me explain. Before the war, ascents of the difficulty of the east face of the Fleischbank counted as the most serious undertakings, only possible to people with the greatest attitudes and with the best work out. However, the years immediately following the war showed that even men of mediocre aptitudes, with good training were in able to perform such ascensions. Precisely for this fact, the individuals who from time to time with their ability stood at the head, they were pushed farther and farther upward into the

difficulty of the climbs they carried out, and, which is mine judgment is decisive, most essential strengthened in theirs awareness of being up to even greater difficulties. Now, there is no doubt that this consciousness will live up to abnormally difficult climbing performances, represents a main factor for the overcoming of the performances. In other words, the awareness of the extent of one's abilities, in leading group of climbers, is strengthened in the proportion in which the majority of climbers succeed in perform greater performance, and with this awareness they come now made of performances whose possibility would be placed in doubt from the beginning still a few years ago, and that indeed maybe not it would not even be tempted."

The north-west face of the Civetta, climbed in a direct line in the 1920s by Emil Solleder, an outstanding member of the Munich School.

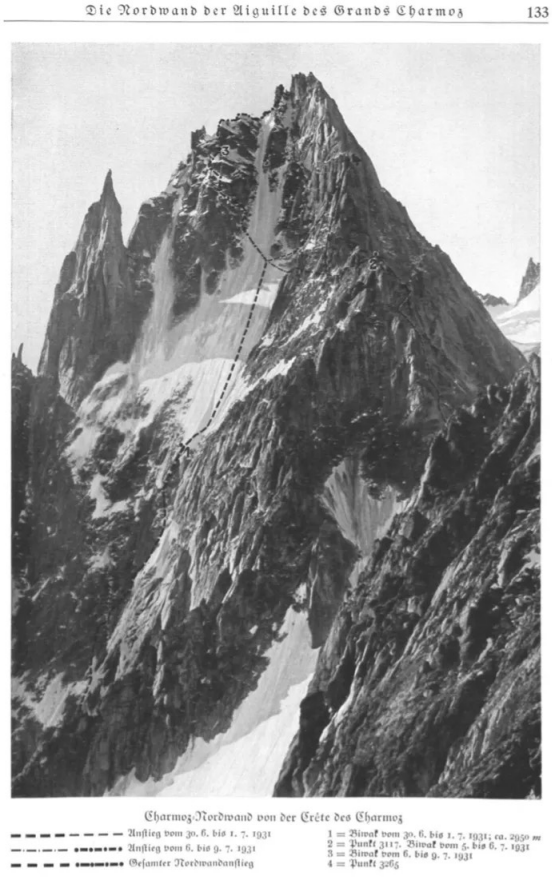
Climbing Tools and Techniques—1908 to 1939-Aid Climbing Mastery (Europe, PartB)

Gran Pilastro. Illustration by Erwin Merlet.

Big walls come of age with new techniques

Stronger carabiners begin to appear in the 1920s, and along with better variety and sizes of pitons, climbers became bolder leading to a huge boom of both mostly-free and eventually, mostly-aid routes throughout the Alps well into the 1930s. International climbing organizations began exchanging more information about remote expeditionary climbing in the Andes, Caucasus, Himalayas, Canadian Rockies, and Alaska, increasing the collective knowledge regarding extended human survival in cold conditions. The tools remained mostly the same as in the final days of evanescent peace before the European war: ropes were still stiff and relatively static mostly manila-fiber ropes (though woven silk ropes were also used by those who could afford), but pitons were becoming more mass-produced and available, and with tools in hand, increased reliance on gear took place.

The concept of Grade VI also changed dramatically in this period. One of the outstanding alpinists of the era, Willo

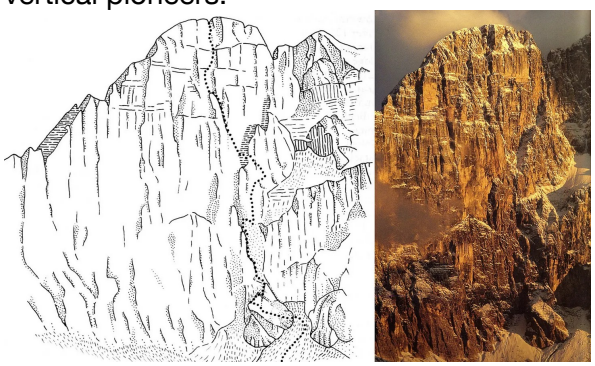

Die Nordwand der Aiguille des Grands Charmoz 133
Charmoz-Nordwand von der Crête des Charmoz
Anstieg vom 30. 6. bis 1. 7. 1931
Anstieg vom 6. bis 9. 7. 1931
Gesamter Nordwandanstieg
1 = Biwak vom 30. 6. bis 1. 7. 1931; ca. 2950 m
2 = Punkt 3117. Biwak vom 5. bis 6. 7. 1931
3 = Biwak vom 6. bis 9. 7. 1931
4 = Punkt 3265

Willo Welzenbach's route on the north wall of the Charmoz

Welzenbach, in 1926 proposed a standard rating system (Grades I to VI) based on his experience with hundreds of routes in both the western and eastern Alps. Welzenbach was also the innovator of both ten-point crampons that fit the entire sole of the boot and shorter ice tools, which were also soon to evolve further on hard alpine big walls.

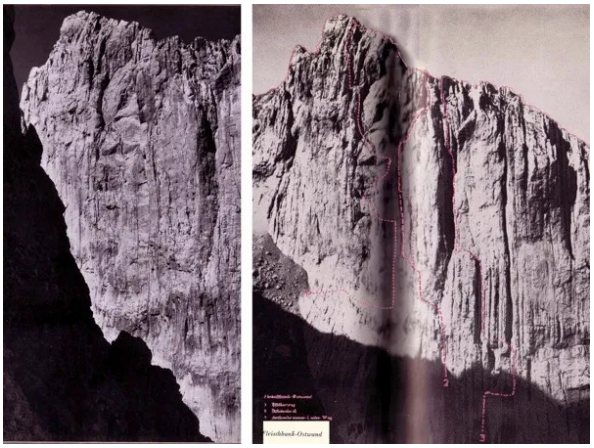
THE SPORTING WAY

In 1925, Emil Solleder and Gustl Lettenbauer climbed the northwest face of the Civetta in a day, a 3,700-foot 5.9 route in the Dolomites, carrying only fifteen pitons for protection and belays, the first route to be universally deemed a “GradeVI” by the cognoscenti. But prior to this testpiece and longest vertical rock climb of the time, big walls were coming of age, and pre-war pioneers--those who were still alive after the war--continued to push standards. Otto Herzog and Gustav Haber climbed the 1,000-foot Ha-He Dihedral on the Dreizenkenspitze in 1923, a technical big-wall route requiring two bivouacs; it was not repeated, despite many attempts, until the 1950s. Hans Fiechtl's Ypsilon Riss (5.9, A1) on the 1,200-foot north face of the Seekarlspitze was perhaps the most difficult of the era. New routes with names reflecting their character captured climbers' imaginations, and the increase in the appeal of big rock routes spawned a new breed of vertical pioneers.



Northwest Wall of Civetta (AJ)

Prior to his immigration to the USA, Fritz Wiessner teamed up with Solleder and aid master Roland Rossi for some wild long rock adventures in the Alps, including the southeast face of the Fleischbank (V+), and the north wall of the Furchetta (VI). Trusting the security of the newer pitons, more climbers became willing to risk lead falls, and empowered by the improved safety on the steep stone, free climbing standards rose further.



Fleischbank

In 1926, in the Julian Alps (now part of Slovenia), Stane Tominsek and Mira Marko Debelakova spent two days climbing the technical 3,000-foot north face of the Spik, their reliance on the new gear making it possible. Tools for safe upward passage were improving, and in 1929 Luigi Micheluzzi and team climbed the Marmolada, the highest peak in the Dolomites, by its steepest route, the 1,800-foot south pillar. Pitons were used for protecting the lead climber and for occasional aid on these historic big walls, but in deference to the strict anti-piton standard of the western Alps, they were used sparingly and pure aid—going from “hook to hook”—was avoided. Truly, all these routes, and others, set new standards of boldness and commitment as early “Grade VI” routes.

„Urlaub 1945!" Aus dem tagebuch-ähnlichen Album eines Mädchens
Fotos: Archiv DAV (2), Archiv DeAV
Kletterausrüstung von Franz Schmid, Erstbesteiger der Ortler- und der Matterhorn-Nordwand 1931

Rack for the first ascent of the Matterhorn. Whether this was the actual Schmid gear, or a re-creation of their reported rack using period equipment, is not clear, as several European museums claim to have the Matterhorn north wall original gear. DAV Panorama 6/2011

IMPOSSIBLE WALLS CLIMBED

The time was right and the tools were there for the first of the famous "last great problems of the Alps." With the ascent of the north wall of the Matterhorn by the brothers Toni and Franz Schmid in 1931, another bold new era for big-wall alpinism began. In contrast to the more predicable stone of the Eastern Alps, the steep ice, snow, and mixed climbing of the great North Faces of the Alps presented new challenges in addition to the mastery of lightweight tools and techniques.

Matterhorn North Face Tension Traverse, 1931

By 1931, two methods of rope traverse had been developed:

1. Using a second rope for rappel and traverse per Piaz and Dülfer.
2. Clipping the main rope into the point of traverse, and using a carabiner as a pulley combined with a good belayer who can hold the leader and let out slack as needed.

Source: 1932 Zeitschrift des Deutschen und Österreichischen Alpenvereins Bd.63 .

More Mattherhorn, N. Face 1931 gear in museums. Caption: Felshaken und Karabiner von Franz Xaver Schmid, benutzt bei der Besteigen der Matterhorn-Nordwand. Liehgabe der DAV-Sektion Alpenklub Berreist, 2009.

It is not clear which technique was used for the first ascent of the North Wall of the Matterhorn, we only have Toni Schmid's description:

"*Slowly but steadily I work my way up the notch. Sometimes I use the narrow ice strip, sometimes the rocks to the right of it. The body snuggles up against the smooth plates, the hands lie on flat bulges. Then the pick rages again in the hard water ice. Once, passable rocks to the left of the ramp tempt me to continue. The wall, which was easy to grip at first, soon seduced me into sloping vertical slabs. A very dangerous rope traverse brings us back to the intersection after hours of work. Then continue again. A grim struggle has set in. Meter by meter, extremely slowly. Blood spurts from the sodden and sodden fingers. But only forward, there is no turning back. Up to the summit, out of the horrible wall! The sun is already very low, and we have finally, finally, overcome the ice band. The hardest work requires a vertical, icy wall. Then we stand at the beginning of the flat summit wall.*"

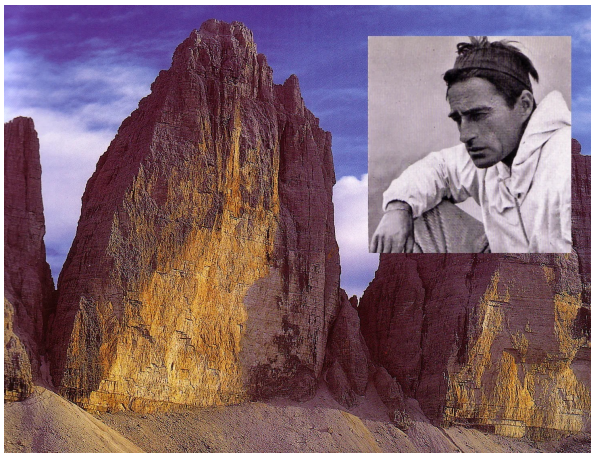
(1932 Zeitschrift—Matterhorn North Wall, Toni Schmid, München, first ascent July 31 to August 1, 1931)

Re-imagining Grade VI, aid-climbing breakthroughs

In the 1911-1912 piton dispute, Paul Preuss imagined a standard to access the difficulty of a climb: " .. a good standard for assessing the difficulty of a route – a piton coefficient – would be expressed by the ratio between the height of the face and the number of pitons!" Counting the exact number of pitons used en route became standard practice in this period, though few bothered to divide the total by the height of the face, as Preuss suggested. And in the 1930s, pitons began to appear more widely in both the western and eastern Alps, and climbers began to universally recognize that the use of anchoring systems was facilitating superb achievements on extremely difficult vertical terrain. The popularity of the sport increased, and the climbing population evolved from consisting of primarily aristocrats and guides to a broader set of athletes, doctors, lawyers, engineers, and a new breed of working-class heroes, one of whom became legendary.

Emilio Comici

Emilio Comici was an Italian longshoreman who started with cave exploration then became an expert in the techniques pioneered by Piaz, Dülfer, Dibona, Herzog, Fiechtl, and others, and revolutionized climbing by advancing a new style well suited for the extreme cliffs of the Dolomites, and ultimately, the big walls of the world. Comici led an era leading to all the modern aid techniques, such as using multi-step aid ladders and daisy chains, ever-more complex rope maneuvers, hanging bivouacs, and climbing with a trail rope as a means to stay connected to the belayer for hauling up extra equipment. Realizing that he had a choice either to reject the use of mechanical aids or to accept them wholeheartedly, he chose the latter and made heavy use of the new tools. In 1931 he put the new systems to the test on the 3,600-foot northwest face of the Civetta, and the result was the steepest and perhaps the most difficult climb in the world (and to this day it is still a challenging twenty-six pitch vertical adventure).



Cima Grande North Wall (1933) and Comici

In 1933, Comici's direct line up the incredibly steep 1,500-foot north wall of the Cima Grande wavers slightly but no more than if the wind buffetted the mythical drop of water back and forth. On the lower half of the wall Comici, Giuseppe Dimai, and Angelo Dimai used just seventy-five pitons--one every ten feet, on average--more reliance on aid than ever before, but hardly excessive from an aid-climbing view, considering that the wall overhangs continuously and is composed of less-than-solid rock. Comici wrote of the route, *"You know, dear Giulio, that the ideal climbing route, the elegant route, follows the falling water drop … I traced a hypothetical water drop that came down, down and splashed on the talus … the beautiful line came to us at last, when we agreed where the drop had fallen*" (Comici as cited by David Smart). Inherent in routes inspired by the mythical drop--the direttissimas as they became known--is actually studying the rock, examining every little corner and crack, and mapping an elegant line of connected features.

Routes of this caliber became the prototypical "Grade VI" for the next 60 years. Comici freely shared his expertise, inspiring many with his dream of the ultimate aesthetic line. Yet he died young, never knowing that his dreams and philosophies were to create passionate splits in climbing attitudes as new technologies developed. David Smart sums up Comici's contribution to big wall climbing:
"Leonardo Emilio Comici led generations of climbers to the biggest rock walls in the world. Did he lead us into, or out, of a paradise of innocence? We still have to learn that, whether we are inclined to reject technology when we climb, or to accept it, all disputes with the mountain need not be settled; to leave some of our beliefs and reasons, prices we are willing to pay, and strategies of last resort on the ground."
(David Smart, Emilio Comici, Angel of the Dolomites, 2020).

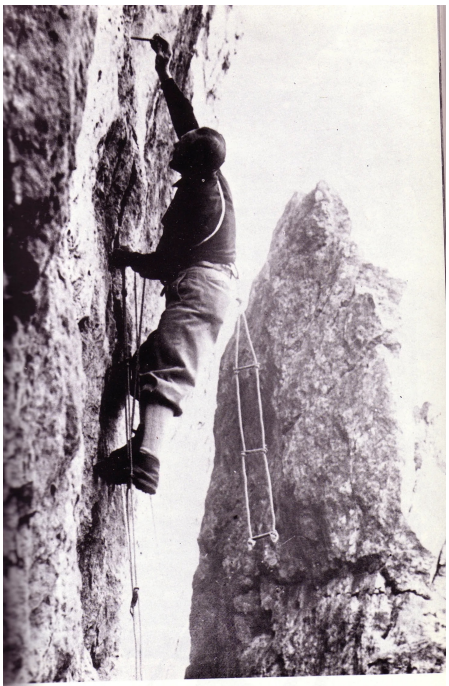
Age of Innovation

The 1930s were an age of innovation in Europe. The leader of a talented new group of climbers from Fontainebleau, Pierre Allain, developed lightweight down clothing and bivouac equipment suitable for surviving on the steep icy faces of the Alps. He also began developing early aluminum carabiners. In 1935 he made the first ascent of the cold north face of the Petit Dru, near Chamonix, with Raymond Leininger. This was a pioneering, two-day free and aid route that combined the challenges of an alpine route with the technical aspects of the Dolomite and Kaisergebirge vertical walls.

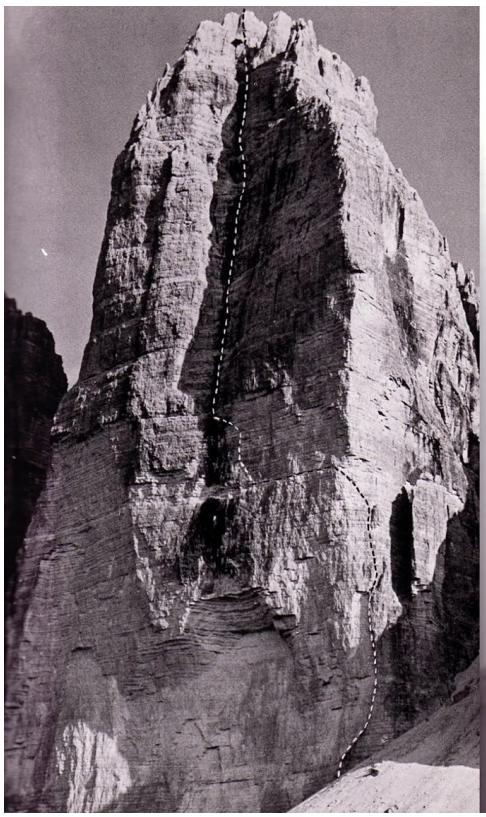
Quote from the era of precisely graded climbs:
"When we reach the sixth grade, we will find we have not entered the kingdom of heaven"
--Tita Piaz.

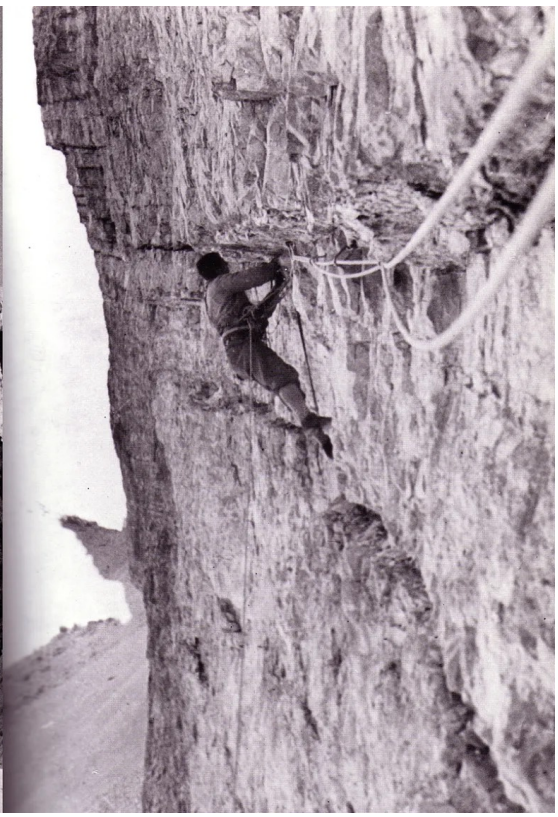
Riccardo Cassin

Around the same time, the Simond firm in Les Bossons began to manufacture pitons, equipping a new breed of extreme climbers. Gino Soldà, Raffaele Carlesso, Domenico Rudatis, Ettore Castiglioni, Raimund Schinko, Alfred Couttet, and Giusto Gervasutti all made incredible technical climbs during this period, but the climber who stands out most prominently, both for the quality of his routes and the breadth of his vision, was Riccardo Cassin, who later manufactured high quality pitons and other gear. Cassin quickly mastered aid techniques and took them to new extremes on the major routes of the period, including the Walker Spur of the Grandes Jorasses (with Gino Esposito and Ugo Tizzoni), the northeast face of the Piz Badile (with Esposito and Vittorio Ratti), and the north face of the Cima Ovest (with Ratti). Cassin's routes continually pushed standards of difficulty and commitment.

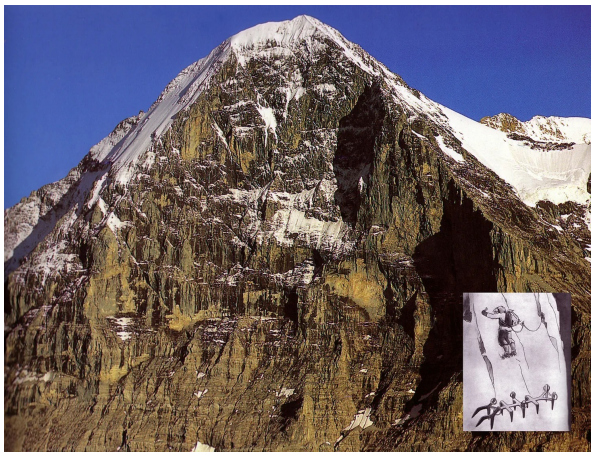


24 Riccardo Cassin practising artificial climbing on the Corno del Nibbio.

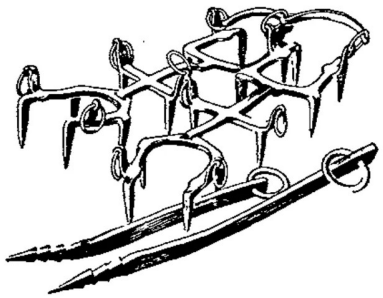




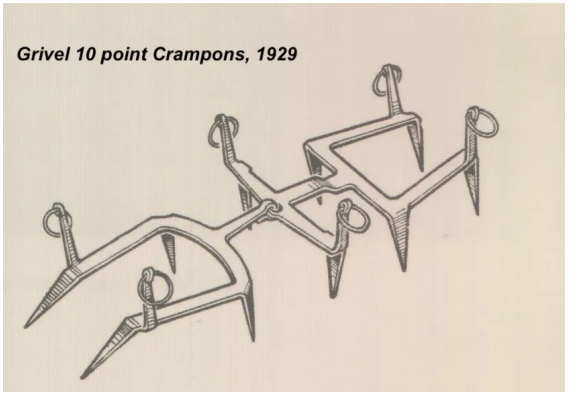
Cassin's route on Cima Ovest North Wall (1935)



Eiger North Wall --new era at express speed. Perhaps the best description of the marriage of technology and human boldness in the interwar period came from Heinrich Harrer, in his account of the first ascent of the north face of the Eiger in 1938. Harrer had elected not to take a pair of crampons for the ascent, while his partner Fritz Kasparek had a pair of traditional "ten-points," crampons with sharp points evenly spaced around the sole of the boot. As they finished a long session of step-cutting across the Second Icefield, they were surprised to see below them Anderl Heckmair and Ludwig Vörg rapidly approaching, using the "fashionable" twelve-point crampons made by Laurent Grivel, a guide and blacksmith of Courmayeur, in 1931. The addition of two front-facing prongs allowed a climber to climb on his toes, facing forward rather than using the traditional French method of keeping the foot flat on the ice, as if frictioning up a slab. "I looked back, down our endless ladder of steps," Harrer wrote later. "Up [the Second Icefield] I saw the New Era coming at express speed; there were two men running--and I mean running, not climbing--up it." The two teams joined forces for the historic first ascent of the Eigerwand. This climb should have marked the opening of a whole new era, but the outbreak of another tragic European conflict soon put an end to the risky vertical games.



Most climbers in the 1920s and early 1930s only had 10-point crampons, as depicted as state of the art in the 1932 DuOAV, these were eventually superseded by front point crampons.

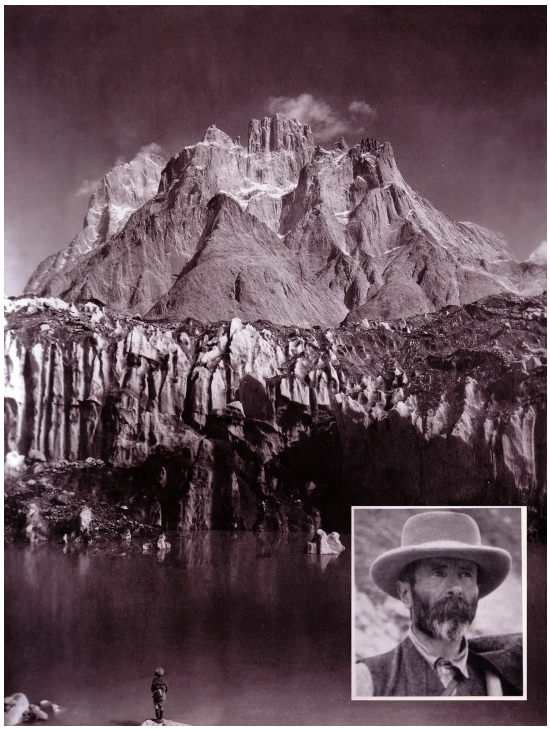


Grivel manufactured some of the earliest "front-point" crampons, a simple modification to the Eckenstein design. Note that this innovation, like many other climbing gear designs, was also only made possible by incorporating stronger steels (with more precise hardening) that were coming 'online' (i.e available to smaller manufacturers) in the late 1920s. Eventually the design evolved into a 12-point design with two additional downward points at the front, which required more complex and careful manufacturing techniques, and became the standard state-or-the-art crampon design in the 1960s and 1970s.

Front point crampons on the Eiger north face, 1936. Caption: Ludwig (Wiggerl) Gramminger on the Hinterstoisser/Kurz rescue attempt at the "Stollenloch" of the Eigerwand. Note gear: shoulder protection, with the usual rope technique. Remarkable are the front points – in a diagonal position – of his crampons. Early evidence of 12-pointers, "handmade" in Munich by the mountaineer-locksmith Schorsch Hausmann, who also made for R. Peters/ M. Meier's first ascent of the Grandes Jorasses north face via the Croz pillar (Research Nicho Mailnder). Photo: Archive Ludwig Gramminger, courtesy Hermannhuber.de:

Expedition Developments

Better climbing through technology is not just about improved ropes and specialized hardware. Equipment for surviving the elements contributed equally to rising standards. Before his disappearance in 1895 whilst reconnoitering Nanga Parbat in the Karakoram, Albert Mummery had developed light weight silk bivouac tents and insulating gear sufficient for living in extreme conditions. Prior to the first world war, lightweight, warm garments were evolving, and with the new all-weather equipment, climbers were prepared to spend multiple days and nights in harsh conditions to gain an ascent. They pursued steeper, longer rock climbs, and their level of commitment towards climbs reached new heights.
In the western Alps, where the mountains are more alpine in nature, artificial aid on rock was considered unsporting, but in the eastern Alps with its spectacular vertical limestone cliffs, a new standard was arising. When the Italian expedition led by the Duke of Abruzzi returned from the Karakoram in 1909, expedition photographer Vittorio Sella's lithographs of the stupendous rock walls of the Baltoro must have sparked a climber's imagination and provided additional rationale for climbing the steep cliffs at home.



Vittorio Sella, Karakoram, 1909

Emilio Comici.

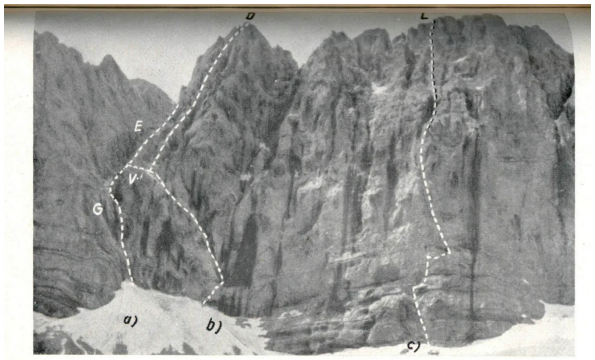


Abb. XII: Dreizinkenspitze und Laliderer Wand von Norden

D: Dreizinkenspitze; L: Laliderer Wand, Gipfel; G: Riesengrotte der Ha-He-Verschneidung; V: Verbindungsweg, R 815; E: Eisschlucht, R 818

a) Ha-He-Verschneidung, R 813; b) Dreizinkenspitze-Nordwand, Westliche Verschneidung-Gipfelaufbau, R 814, R 816; c) Laliderer Wand, Krebs-Schmid-Führe, R 809

Ha He Dihedral-another testpiece of the era.

Stufe	Begriff	Musterbeispiel aus dem Wettersteingebirge	Musterbeispiel aus dem Kaisergebirge	Musterbeispiel aus den Gesäuse	Musterbeispiel aus den Dolomiten	Musterbeispiel von Eistouren
1	leicht*	Schneefernerkopf, Leut. Dreitorspitze (Schneerinne)	Hint. Goinger Halt, Karlspitzen vom Elmauer Tor	Planspitze Reichenstein (gewöhnliche Anstiege)	Kesselkogel Tofana di Rocces	Großvenediger
2	mittelschwer	Kl. Wagenstein übers Mandl, Musterstein-Westgrat	Kl. Halt-Gams-Halt-Elmauer-Halt, Totenkirchl-Führerweg	Planspitze (Nordwand), Pichlweg Hochtor-Ödstein-Grat	Cima Tofa Croda da Lago-Nordgrat	Eiskögele-Überschreitg.
3	schwierig	Kl. Wagenstein Westgrat, Musterstein Südwand (Leberlew.)	Hint. Goinger Halt-Nordgrat Totenkirchl-Heroldweg	Planspitze-Nordwand, Sellnerweg Planspitze-Nordwand, Innstaler-kamin	Kleine Zinne Grohmannspitze-Enzenspergerweg	Presanella-Nordwand
4	sehr schwierig	Dreitorspitze N.O.-Gipfel Ostwand, Bayerländerturm O.W.	Predigtstuhl-Ostlerweg, und -Westschlucht	Reichenstein-NW.-Wand Hochtor-Nordwand, Pfannlweg	Pala della Madonna N.O.-Pfeiler, Crozzon di Brenta N.-Kante	Jungfrau-Guggi-Aufstieg
5	überaus schwierig	Jungfernkarkopf-Nordwand, Scharnitzspitze-Südwand	Totenkirchl-W.-Wand, Piazweg, Fleischbank Ostwand	Planspitze Nordwand, Deyerweg, Ödstein-Nordkante	Cima della Madonna-Schleierkante, Torre del Diavolo	Lyskamm-Nordwand
6	äußerst schwierig	Schüsselkarspitze-Südwand, Hochwanner, direkte Nordwand	Fleischbank-Dülferriß, Predigtstuhl—Fiechtl-Weinberger-Weg	keine Gesäuse-Tour	Furchetta Nord-Wand, Civetta-Hauptgipfel-N.W.-Wand	Wiessbachhorn-Ostwand, Dent d'Hérens-Nordwand

* Voranzustellen wäre gegebenenfalls noch die Bezeichnung „Allgemeinleicht" für aufgebahnten Wegen zugängliche Aussichtsberge, die nicht unter diese nur für Hochturen geltenden Beispiele fallen.

hardest climbs categorised in 1926

Grade IV. A vertical and exposed route (Dolomite exposure), with good footholds and handholds which require looking for. To a good climber not severe. Examples: Spigolo, Vajolet Towers, Longland's Route, Clogwyn dur Arddu. The top overhanging pitch of Longland's is, to my mind, a typical Grade IV pitch. The Kinne route, Fünffingerspitze.

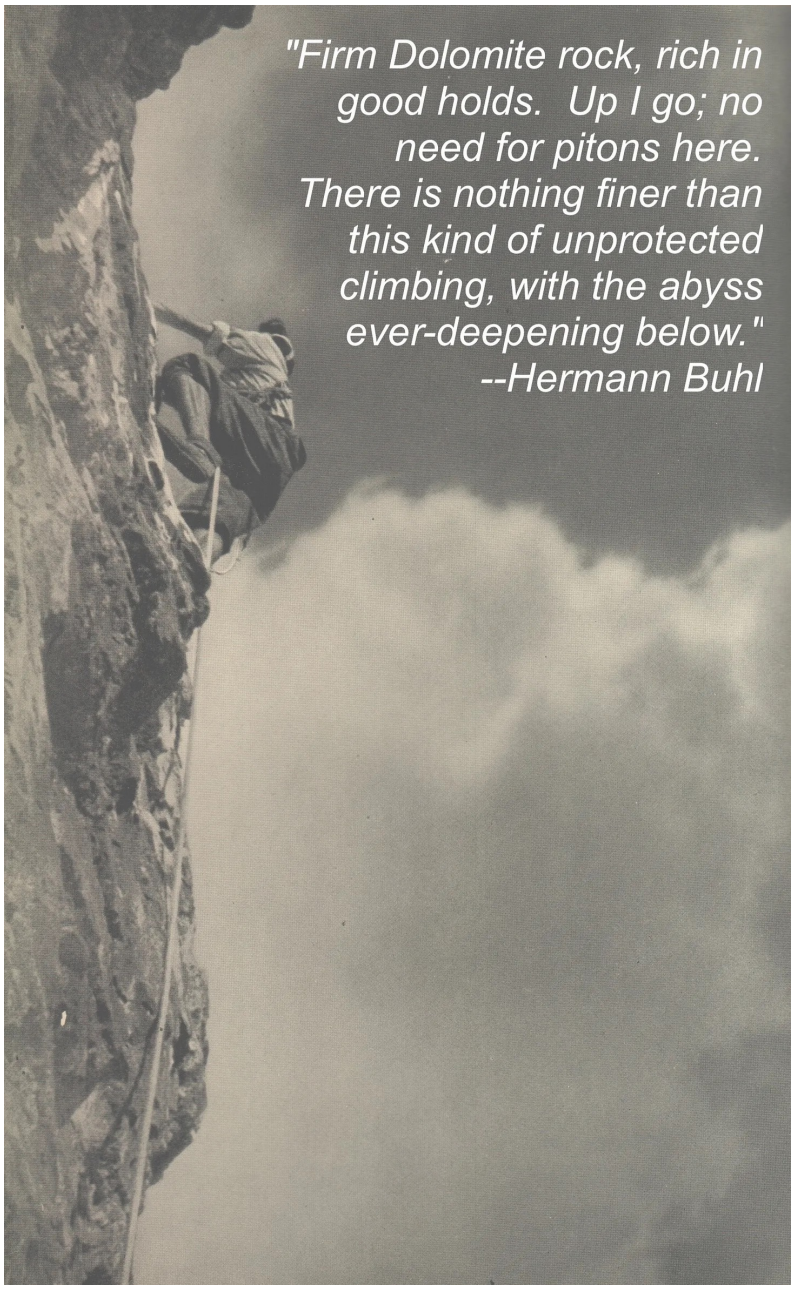
Grade V. A vertical and exposed route, with only finger and toe holds which are difficult to find, causing tension and fatigue. Pitches are usually 60 to 100 ft. Belays are nearly always pitons. Occasionally a piton is put in for moral security. The pitons are not used to enable one to climb the route. Examples: the Great Slab Route on Clogwyn dur Arddu, Kirkus' Curving Crack, the Hilverson Route, Cima Piccola, the Dibona Route, Cima Grande, the Steger Route on the Vajolet Towers.

Grade VI. Pitch is vertical or more usually overhanging where a piton, or pitons are inserted to obtain assistance from the second. Any route or pitch that is climbed without the aid of the piton is Grade V.

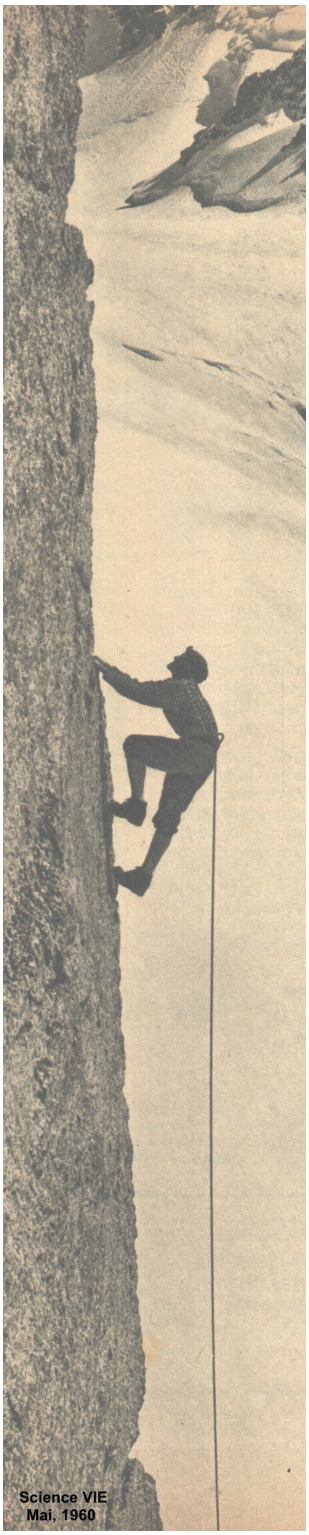
Above: Alpine Journal definition of grades

Grosse Zinne. The north face of this forbidding pillar, one of the most impossible looking walls in the Dolomites, has at last succumbed to the "hardware" technique that in the Eastern Alps goes under the name of rock-climbing. A number of attempts have been made but on August 10th the guides, Josef Dimai and Dibona, with 90 pitons, 50 karabiner, over 750 ft. of climbing rope and 500 ft. of small line, made an attempt which placed them fairly high up on the wall. The next day they were joined by the amateur, Emilio Comici, and the guides, Angelo Dinai and Antonio Verzi, who brought with them a large number of pitons and karabiner and over 400 ft. more rope. The combined party was again forced back and the guides, Dibona and Verzi, gave up in disgust, but nothing daunted, the remaining three set out again on August 13th and after a night spent on the wall succeeded in completing the ascent. A German paper chronicles the climb as "die Erste Durchnagelung" of the north wall and we are inclined to agree that probably the conquerors are better blacksmiths than rock-climbers. They should certainly be made to join the quarrymen's union. Their work must, however, have been of an inferior quality as the two brothers, Peter and Paul Aschenbrenner, who repeated the ascent a month later, September 11th-12th, reported that many of the pitons were unusable owing to their looseness.

"better blacksmiths than rock climbers..."


"Firm Dolomite rock, rich in good holds. Up I go; no need for pitons here. There is nothing finer than this kind of unprotected climbing, with the abyss ever-deepening below."
--Hermann Buhl

Every climber dreams of climbing without complexity. As the classic and more obvious lines up the great walls of the world were envisioned and ascended, climbers began looking for more outrageous lines and positions, and many of these required aid climbing tools and techniques to access. Developers sought ways to make each piece of necessary equipment more "transparent" to the ascent.

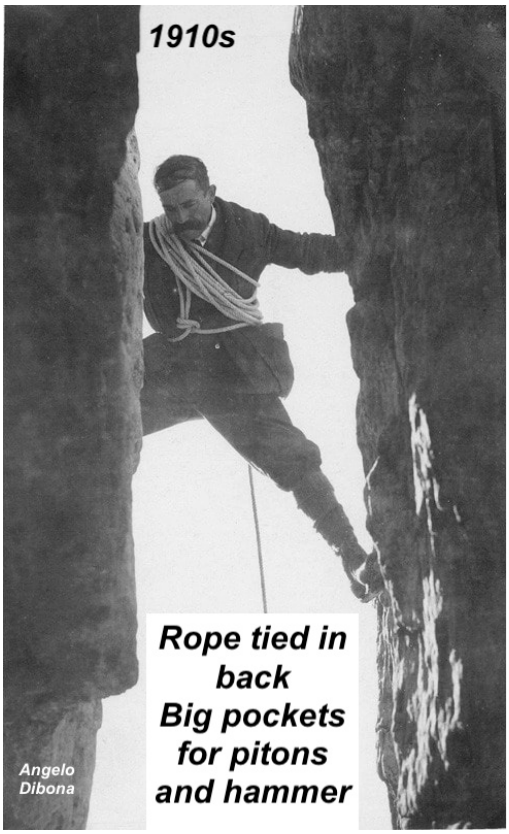


Author's Note. It is hard writing a book. What started as a collection of notes to improve historical data based on evidence and research stemming from my original Mechanical Advantage article published in the 1999 Ascent (edited by Steve Roper and Al Steck over many bottles of wine), has turned into a longer multi-year project. Putting all the Substack posts into a print form has been more challenging than I imagined, and in this version similar information appears in different places, as it was researched.

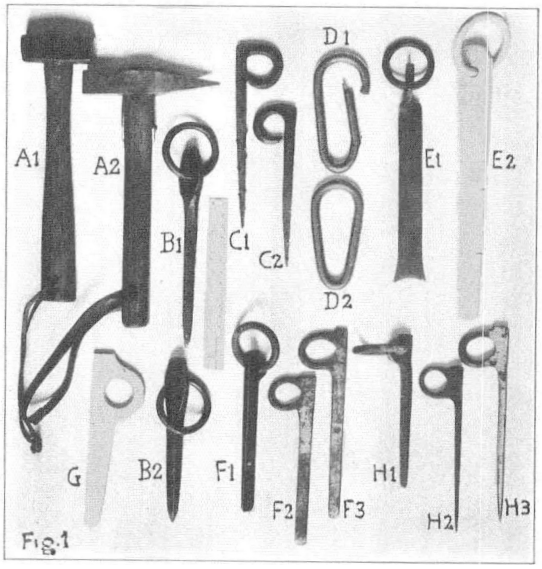
The big question is how climbers went from using a piton or two drawn from their pockets in 1910 to a complete methodical system of engineering a safe passage up the most imposing rock walls on Earth in 1930, in increasingly more efficient ways with new tools, skills and abilities. In other words how we got from the 1910 image of Dibona climbing a chimney, to all the specialised equipment of the 1930s.

A fun part of this research is learning of the lesser known past pioneers; part of the reason I have gone into such depth of climbers like Tita Piaz's early climbing career, is that it's probably similar to many climber's introduction to rock climbing even well into the 70's, the age of stiff goldline ropes, and when I began climbing.We did not use pitons, but the clean gear back then was pretty limited, so run out climbing was the norm. As a beginner, hearing and vaguely knowing of great climbs and climbers, with little or no access to good information or guidance, and eventually going out and figuring it out for oneself, often with a few close calls. Then, choosing to live the full time climbing lifestyle, scrapping for any work and spending cash quickly, the only thing that matters is the next climb (an 80's version in the Valley included scarfing and searching for aluminium deposit cans, being ready for rigging and film work, bootleg guiding El Capitan and living from rescue check to rescue check, and very gradually getting better set up. In my case, getting a van—with no motor—as a winter survival shelter between climbing seasons, probably at least as good as an seasonal bivy spot in the Rifugio ;). It is also interesting to map Tita Piaz's attitudes on risk, as it evolved with his climbing style and ambitions as he grew older and became more devoted to family.

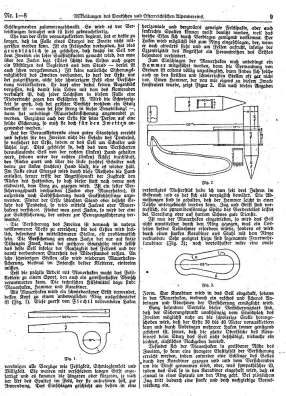
Note: because the origin of carabiners has been a recurring topic, I will try to combine info in this next section.

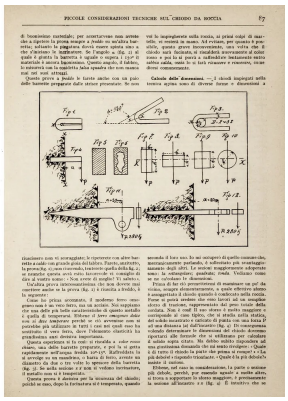


Early carabiners



State of the art equipment, 1932, including European steel carabiners pictured in the American Alpine Journal article called "Old and New Helps to the Climber" by Max Strumia. Max (Massimo) Strumia was born in Italy in 1896, and emigrated to the USA in1920, introducing many in North America to the new tools that had been developed in the Alps over the previous three decades.





These two articles in the German Austrian journal (1920) and the Italian CAI journal (1926) define the state-of-the-art of the early decades of the 20th century, introducing new understandings of steel and strength in climbing, based on the state-of-the-art metallurgy at the time.

Summary:

- The common lore that climbing carabiners were 'invented' in 1910 is nuanced.
- Carabiners were first used for rock climbing in the late 1800s.
- Carabiners in 1910 were mostly used for body-weight only aid systems.
- Stronger carabiners for running belays and able to withstand the forces of a runing belay fall appear more widely in the 1920s as a pear-shaped design, and became standard equipment for long multi-pitch technical rock routes by the 1930s, when strong oval carabiners then become the standard design.
- The carabiner as we generally know and use them today first appear in the 1920s and 1930s as a standard climbing tool. Two or three carabiners were considered the most one would ever need, until the advent of the more technical big walls of the 1930s.

Typical Snap Links are available at every hardware store (this one from Red Lodge, Montana Ace Hardware). These were also common links in the 19th century and mass-produced from mild steel. I recently tested one (2022), and it tested well but unlikely to catch a climbing lead fall.

1910 Carabiners and Iron Rings

Snap-link devices of varied designs for climbing were all called Karabinerhaken (carabineer's hook) or simply Karabiner. Although there were strong specialised tools being made for other industries such as firefighting or mining, these were often costly and heavy, there were also "everyday" snap links that were not designed for climbing, and the early ones depicted in the early literature look similar in strength to today's 'toy' carabiners, usually marked "not for climbing"—they might hold body weight, but not much more.

A tool that was implemented for climbing were strong forged steel rings, specified as 8mm thick and 70mm in diameter, that could "be obtained at any ironmongers" (1910). "Eisenringen" (forged and welded steel

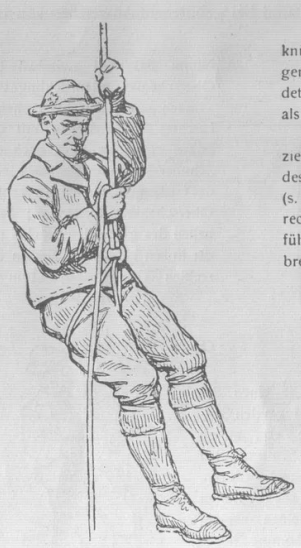
Mitteilungen des Deutschen und Österreichischen Alpenvereins.

Gute Abseilmethode. Man schreibt uns: «Es ist schon so oft von Abseilmethoden geschrieben worden, daß es mich wundert, daß hierbei nicht auf ein gutes, altes und erprobtes Hilfsmittel aufmerksam gemacht wurde, das an Sicherheit und Verläßlichkeit den bisher geschilderten Methoden sicher nicht nachsteht. Es ist dies die Benutzung eines einfachen, geschmiedeten Eisenrings von etwa 8 mm Stärke und 70 mm Durchmesser, wie man solche in jeder Eisenhandlung erhalten kann. Durch diesen Ring wird das Seil zwei- bis dreimal durchgeschlungen, je nach dem Gewicht des sich Abseilenden, und es entsteht beim Abseilen durch das Durchwinden des Seiles durch und um den Ring eine vorzügliche Bremse. Man befestigt an dem Ring eine Seilschlinge oder Gurt, in den man sich bequem hineinsetzen kann. Mit der linken Hand hält man sich an dem von oben kommenden Seil, während man das freie Ende mit der rechten Hand leicht nach oben geneigt hebt. Die Bremswirkung ist absolut sicher, leicht für rasche und langsame Fahrt zu regulieren und hat den großen Vorteil, daß die ganze Seillänge ohne Verlust für Schlingen oder Befestigungen ausgenutzt werden kann, wenn das Seil, wie in Nr. 1 der „Mitteilungen" von 1907 beschrieben, mit einem Eisenring versehen ist und durch den kleinen Ring der Seilschlinge gezogen wird. Dabei ist noch besonders hervorzuheben, daß bei dieser Abseilung das Seil geschont bleibt, da es sich an der glatten Fläche des Rings nicht abscheuert. Um nun auch die Seilschlinge wieder zu erlangen, empfehle ich, sie nicht in gewohnter Weise aufzuhängen, sondern so um den Fels zu legen, daß zwei Schleifen nach unten hängen, von denen eine mit einer Rebschnur versehen ist, an welcher nach dem Einholen des Seils mit Leichtigkeit die Schlinge ebenfalls herunterzuziehen ist. Als besonders vorteilhaft würde ich sogar empfehlen, statt der Seilschlinge nur ein einfaches Seil von etwa 2 m Länge zu verwenden und beide Enden mit kleinen Eisenringen zu versehen, durch welche das Seil gezogen wird. Ein Verfangen beim Einholen dieses kleinen Seils ist nach meiner Erfahrung gänzlich ausgeschlossen.

Wilh. Schmidt-S. Offenbach a. M.»

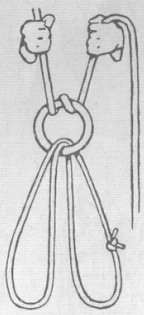
C. Mit größter Ausnützung der Seillänge.

Soll nur ausnahmsweise angewandt werden, da die Abnützung des Seiles durch die gegenseitige Reibung und die starke Knickung an der Ringumwindung eine sehr große ist.



Aus ca. 2 m Reepschnur knüpfe einen Ring, der doppelt genommen durch einen geschmiedeten Strangring gezogen und als Sitzschlinge benützt wird.

Durch denselben Strangring ziehe zweimal das untere Ende des einfach eingehängten Seiles (s. S. 14) und halte mit der rechten Hand das nach unten führende Stück. Aufwärtsziehen bremst.



Als Selbstsicherung beim Abseilen kann eine von Sixt-Kröner konstruierte, 250 g schwere Klemmvorrichtung (in München bei Karl Biber) empfohlen werden.

Left: 1910 detailed description of abseil method with strong forged "iron" rings that were readily available. Right: the technique illustrated in Anwendung des Seiles, 1913

Early Eisenrings for climbing from
Historisches Alpenarchiv

rings) are also often described in the early literature as a multi-purpose device used means to reduce rope drag from a rappel anchor, sometimes for a running rope on lead, as well as a rappel device.
But for most climbing, the "Seilring" or knotted rope sling (also called a "vine cord") was still the main way of connecting the rope to anchors. If the system is not dynamic, a simple and light rope sling is an efficient system. But as climbers were leading farther above gear, and starting to use the rope to swing around the rock, tools for a more dynamic system were envisioned and developed. The idea often seen in short histories that the carabiner was invented to clip into the Fiechtl offset-eye piton design, or vice versa, is just plain wrong—the offset eye was advantageous for other reasons (see pitons chapter), and the early literature on making pitons specify an offset eye with rounded edges to best secure with a hemp- or manila- rope sling.

Early carabiners were "body-weight" only
Early carabiners were used as a quick way to secure oneself, mostly noted as a point of connection and useful on overhanging, awkward moves where clipping oneself into a piton (instead of relying on the belayer) with a sling can assist in making the next move, or by being used as a mini-pulley, so some could pull themselves up to an anchor more easily. Their initial use in climbing was for body-weight-only applications, not to clip a piton anchor into the lead rope; instead, slings were preferred. In 1928, a Mitteilungen article on dynamic fall rope testing cites an example of a carabiner breaking on a fall of only 1.2m with a 80kg load, and notes that the materials were the main issue, concluding, *"the resistance of such hooks against shock loads during free falls is very low. It is lower than climbing ropes."*

On the other hand, the relatively weak but useful carabiners commonly used at the time are noted for many other applications on the vertical, and in 1920, after explaining how the carabiner can be used as a point of temporary security or as a pulley, the Mitteilungen recommends *"the climber must therefore carry with him: 3-4 wall hooks, 2-3 carabiners, and a hammer"* while noting, "and also rope slings, which often serve well!" The convenience of a carabiner to clip into a piton at the end of a tension traverse, when only one hand might be free, is noted in the early literature, and some climbers used carabiners to help direct the rope in conjunction with a body belay. Interestingly, there is no evidence that carabiners were ever used to rack pitons for the lead climber until later in the 1920s, as most gear was still stashed in one's pockets for climbs of the earlier era.

In short, it is not very clear who invented the first modern "climbing carabiner", one strong enough to withstand typical dynamic loads in climbing. Curiously, Franz Stöger (1883-1935) the keeper of the Stripsenjoch hut near the Totenkirchl, which he climbed over 200 times, is noted as "the inventor of the karabiner ring" in his obituary (AAJ, 1937), but not much else is readily known of Stöger. There is also evidence that early strong carabiners for climbing were first developed in the Elbstandsteingebirge (see appendix). But most early references to carabiners are for body-weight-only applications, mostly as a point of temporary and quick attachment to an anchor.
What is more clear, however, is that toward the late-1920s full-strength carabiners first

became more widely available and directly led to even greater breakthroughs in the mountains, such as the first ascents of the North Face of the Matterhorn and Eiger in the 1930s, which both involved roped tension traverses and other maneuvering using utilizing lightweight rope-carabiner-piton systems.

Now that we have gotten a few myths out of the way, we can look at the fun new ways climbers used the ongoing innovations in climbing equipment on the big walls of the world (including going more in-depth of the double rope acrobatics the early pioneers) then onto the new frontiers during the 1920s and 1930s in the European Alps.

(Some info repeated ff)

University of Heidelberg 1485 sketch of a insertable link, called "hooks". Source: Deutsch Digitale Bibliothek

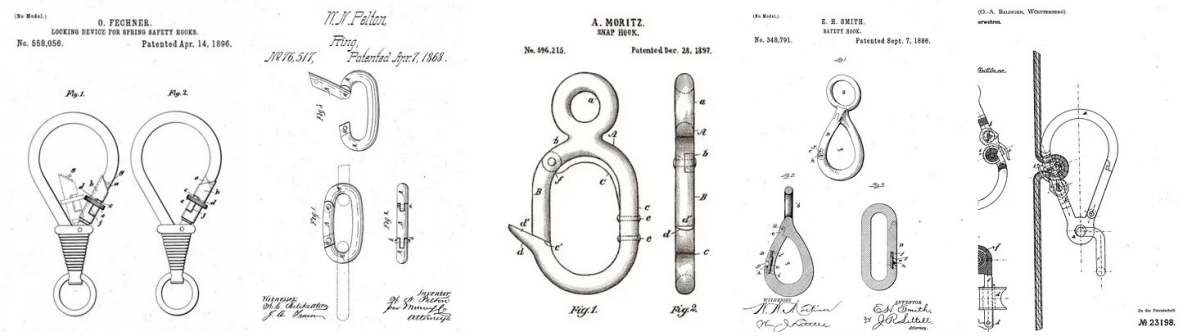
More on Carabiners

After I wrote the previous research on the myth of the "1910 first carabiner", I traveled to the American Alpine Club Library (2022) and was able to hold some of the oldest climbing carabiners in my hand, and had another go at summing up the carabiner story. The researched early history of the carabiner with its main function as part of a running belay goes like this:

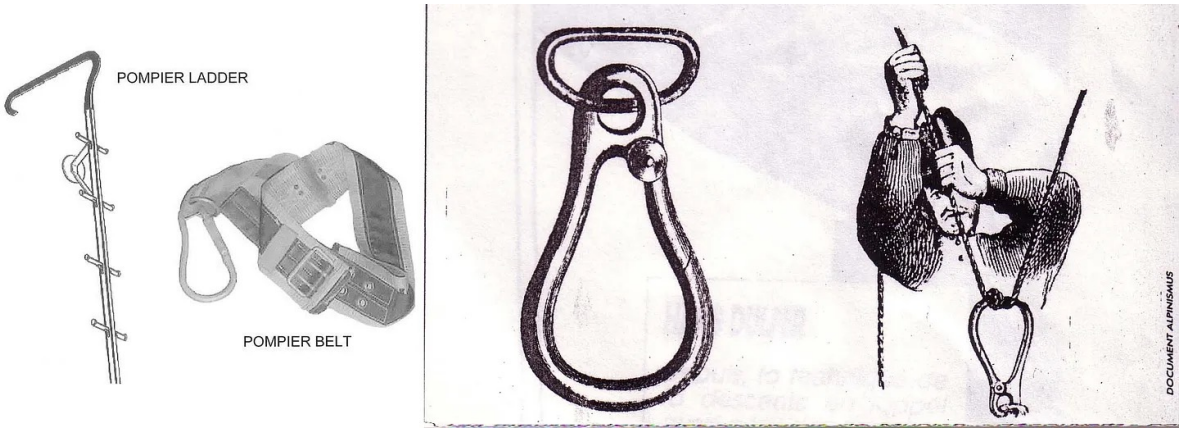
The story of carabiner, like pitons, is informed by the story of steel and evolution of manufacturing processes. The forged fireman tools were expensive and heavy and of limited use for lightweight climbing. After WWI stronger steel became more widely available, and affordable and ever-stronger lightweight carabiners made from round steel stock, manufactured with a bending process, became the main design until the advent of the aluminium forged and bent designs of later decades.

As they were known in the English world, Snap-links (sometimes "swivels") were called Karabinerhaken (carabiner hooks) in German, where various new designs were engineered in the 19th century, and evolved with the availability of better steels, with many types of snap links for various purposes. Many designs were available in the early 1900's.

In contrast, the fireman's rope access device, a forged steel design, had been adopted by a small number of climbers but

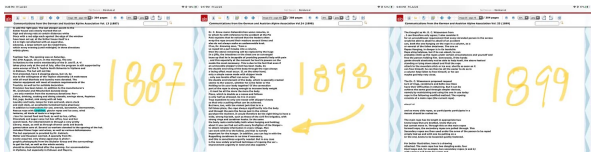


Various 19th century"snap-link" patents designed for other purposes.



Fireman's Pompier belt carabiners were specialised and heavy.

not widely used, as they were specialized, costly, and heavy. The original use was as a device attached to a waist harness for rope work, much like we use a GriGri today, though the idea of belaying the leader with a mechanical belay was still a distant concept. These “Pompier belts” with a strong forged openable link date back to the mid-19th century and were noted in the journals as a climbing and rescue tool as early as 1887.



Karabiners clearly being used as a climbing tool in the Eastern Alps in the German/ Austrian Alpine Newsletters (ref. online).

In the Elbsandsteingebirge, climbers with a single free-carabiner on their rack date as far back as 1892, primarily used to attach oneself to an anchor while setting new routes or for threading a rope through an anchor. See Appendix for further information on the carabiners used in the Elbsandsteingebirge (Joachim Schindler Collection, Dresden).

So perhaps is more proper to say that carabiners were ‘invented’ for climbing in the late 1800s, and used as a temporary point of attachment, or by some as a rappel

another early mechanical descent system (Gary Neptune museum)

Joachim Schindler has done quite a bit of research on the evolution of gear in the Dresden region (Elbsandsteingebirge) and provided this photo of a carabiner on a climber from 1892. SEE APPENDIX

device, though the simpler and more widely available strong forged ring was more likely employed as a descending ring, though most climbers simply used a body friction rappel method to descend.

Toward the end of the 19th century, more climbers began using mass-produced steel snap links bent from round stock and with an openable gate, most likely designed for other purposes, but their legacy of deriving from the specialized versions made for a fire brigade Pompier belt continued, as it reinforced the importance of needing a high-strength version for climbing. Sometimes these were even called in the literature as "fire brigade karabiners", but is also likely that early carabiners were adopted from mining and other industries that were also producing high-strength snap links. Knowledge of carbon steel (steel types and heat treatment) was still a domain of engineers and blacksmiths, and some faulty tools were introduced into the early belay/rope systems, and contributed to documented accidents involving equipment failure.

First known carabiners for pendulums and aid techniques

One design, a general-purpose link that probably first appears in the mid-19th century, made with a steel bending operation, is still a standard “snap link” design in the modern world for all sorts of applications (a typical load rating is about 120kg.). This design was adopted for early climbs involving aid and pendulums in the 1910s, a style that fully matured as a double rope technique by the 1930s (next chapter).

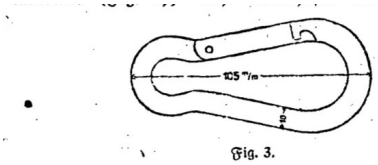


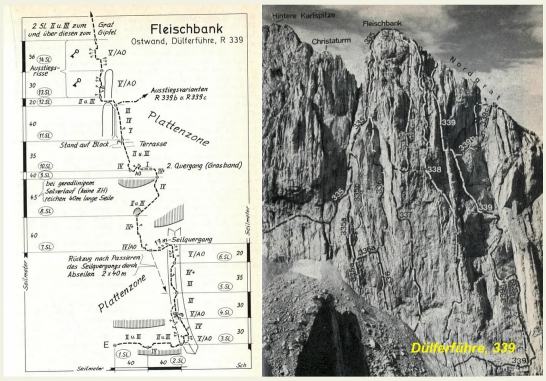
Fig. 3.

1920

The 1920 article notes the usefulness of carabiners for body-weight attachment to rock, and as an effective pulley.

State-of-the-art climbing carabiner design, 1920

It has never been clear who first used carabiners for complex lead climbs, as a means to winch oneself up on a piton with the rope, or as a pulley point for a tension traverse, but their initial use was primarily as a point of aid. The big wall techniques using carabiners were pioneered in the Wilder Kaiser by a number of climbers prior to WWI, Georg Sixt seems to have been one of the innovators. Still, history records Otto Herzog as the “inventor” perhaps because his routes were bold and became famous as testpieces of the new style of climbing involving artificial aid, i.e. engineering pitons and rope systems to help with the ascent of the biggest rock walls ever attempted at the time.



East wall Fleischbank (400m) by Hans Dülfer and Werner Schaarschmid, 1912, with the 17m Seilquergang. The route was repeated seven times in 1912 by Sixt, Deye, Pfann, and others, and it had been previously attempted by Fiechtl, Herzog, Sixt, and Deye. According to the DAV, “in October 1911 Sixt and Fiechtl mastered the spiral climb and the first rope traverse, but had to retreat because of bad conditions.” (DAV, 1978).

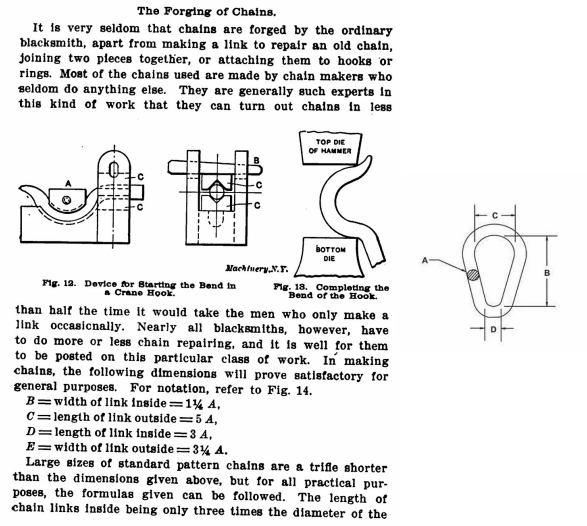
Hans Fiechtl and Otto Herzog famously introduced a carabiner to the rope traverse technique, used on the Schüsselkarspitze in 1913 (topo in appendix)—a tension traverse so bold, that it became known as a pendulum (footnote). But before we look at their innovation and other climbs of new standards, we need to clear up another myth.

Footnote: The boundary between a pendulum and a tension traverse can be blurry. Nowadays, we call maneuvers a pendulum if it involves significant running back and forth to gain momentum, but both pendulums and pure tension traverses can be equally difficult as they both may require the same deft climbing at the end of the traverse. In other words, the “getting there” is easy, the “getting established at the end” is the hard part, and requires a careful belayer.

Early documented use of the carabiner as an aid tool, with new carabiner techniques for tension traverses and pendulums were becoming very well known in the Eastern Alps by 1913. Many years later, Herzog recalled using his first use of carabiners in 1910, hence the oft-cited date of ‘invention’.

First “real” climbing carabiners, 1920s
Early “full-strength” carabiners recommended for climbing and used as part of a running belay appear more widely starting in the 1920s; these are the stronger pear-shaped snap links, made with a bending process from medium-carbon steel (with a good balance of ductility and strength) with a spring-loaded gate, and were used as part of a running belay; that is, as a means to clip a running belayed rope into a piton or other anchor to shorten the length of a leader’s potential fall. In other words, what we consider a “real” climbing carabiner, used to clip into protection while on lead, and most importantly, able to withstand the forces generated in a lead fall.

These stronger pear-shaped carabiners were the standard for a decade or so until strong oval carabiners become the standard carabiner in the later 1930s (some of the earlier oval shapes were weak due to the loading on the gate, as noted in the literature). Pear-shaped carabiners in the 1920s were strong enough to be part of a running belay and were capable of holding the longer (survivable) falls of the era, though perhaps not with a large margin of safety. Only some are marked with manufacturer details, but certainly, sourcing the right brand and reputation would have been important for early climbers using them in high-load situations; there are a few nice examples in the American Alpine Club museum/library and in a few online collections.



The Forging of Chains.

It is very seldom that chains are forged by the ordinary blacksmith, apart from making a link to repair an old chain, joining two pieces together, or attaching them to hooks or rings. Most of the chains used are made by chain makers who seldom do anything else. They are generally such experts in this kind of work that they can turn out chains in less

Fig. 12. Device for Starting the Bend in a Crane Hook.

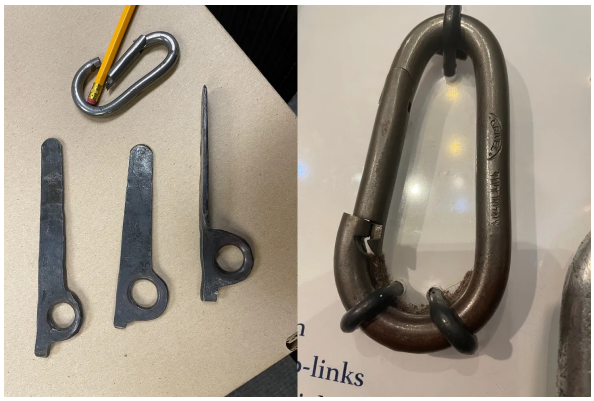
Fig. 13. Completing the Bend of the Hook.

than half the time it would take the men who only make a link occasionally. Nearly all blacksmiths, however, have to do more or less chain repairing, and it is well for them to be posted on this particular class of work. In making chains, the following dimensions will prove satisfactory for general purposes. For notation, refer to Fig. 14.

B = width of link inside = 1¼ A,
C = length of link outside = 5 A,
D = length of link inside = 3 A,
E = width of link outside = 3¼ A.

Large sizes of standard pattern chains are a trifle shorter than the dimensions given above, but for all practical purposes, the formulas given can be followed. The length of chain links inside being only three times the diameter of the

Early climbing carabiners were made with the same technology as chain manufacture.



Early climbing carabiners and old pitons in the AAC museum. Courtesy AAC/Katie Sauter. This design first appears in the 1920s. ASMÜ was likely the first to offer (unbranded) mass-produced carabiners made specifically for climbing purposes. Grivel was probably also making climbing carabiners prior to WWII, and there were also some probably some other manufacturers of high-strength snap links in Europe at the time. It would be of value to determine the exact type of carbon steel to help identify the origins of these early pear-shaped carabiners.

Early Pear-shaped carabiner.
Historishes Alpenarchiv

Sektion BAYERLAND 1922

Karabiner.

("fire brigade karabiner") make sure that the rope runs in the wide part, since it could get stuck in the bend.

Old form. **Ältere Form.** Better new form.

(„Feuerwehrkarabiner").

Achten, daß das Seil im weiten Teil läuft, da es sich sonst in der Kröpfung klemmen könnte.

Bessere neue Form.

10—12 cm lang.

als Abseil-Ring

Eisenringe zweckmäßiger Art haben etwa 60 mm äußeren Durchmesser und 9 mm Stärke und sind aus Schmiedeeisen und gut geschweißt in Eisenwarengeschäften als „Strangringe" für Fuhrwerke erhältlich.

An early explanation of the new equipment in the 1922 Bayerland section of the German Austrian Alpine Club newsletter. Courtesy Hermann Huber.

In the 1920s Nieberl guides to climbing tools and techniques, the carabiner is described: "Karabiner. A modern, very important tool for difficult climbing is the karabiner, made of the best forgeable steel with meticulously crafted snap openings, something like the ones in use by the fire brigade for a long time, of course in smaller dimensions. The previously used form (a) suffers from the fact that the bent area can only too easily jam the rope. This disadvantage is avoided with the uniformly oval carabiners (b and c)." Note that these early 1920s carabiners, though of a better shape, were still probably quite weak in loading. In particular, the early fully-oval design (b, center) was noted to be very weak due to the loading on the gate.

a b c

Ringhaken Fiechtlhaken sog. Mizzi Langerhaken

von der Mitnahme dieses Werkzeuges absehen kannst; ich habe noch immer einen Stein gefunden, der mir den Hammer ersetzte. Wo es sich allerdings um Unternehmungen handelt, wie sie beispielsweise die Westwand des Totenkirchls darstellt, ist zweifellos ein Hammer am Platze.

Fast möchte es scheinen, als ob man in nächster Zeit noch zu einem Steinmetz in die Lehre gehen müßte, um in allen Sätteln der „Kletter"-kunst gerecht zu sein. Es wurde nämlich allen Ernstes schon erwogen (und jedenfalls auch schon in die Tat umgesetzt), mit Steinbohrer auszurücken. Derartig geschmackvolles Beginnen überlasse ich deiner eigenen Beurteilung.

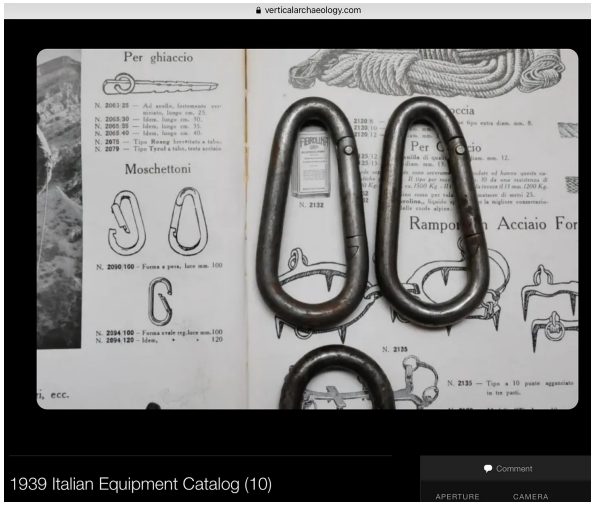
Karabiner. Ein neuzeitliches, sehr wichtiges Hilfsmittel bei schweren Klettereien sind die Karabiner, aus bestem, schmied-

Karabiner

4*

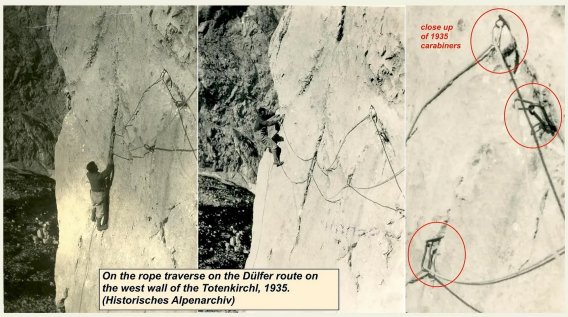
51

Nieberl, 1922



The design of some of the early "full-stength" mass-produced climbing carabiners, possibly first available in the late-1920s. Well-made steel versions of these would probably hold over 500kgs and suitable for short falls (but not by today's standards!). It would be great if a collector could actually test one of the steel pear carabiners made for climbers in the 1930s.
Vertical Archaeology

Double rope tension traverse method on the Totenkrichl Nose Traverse:


close up of 1935 carabiners
On the rope traverse on the Dülfer route on the west wall of the Totenkirchl, 1935. (Historisches Alpenarchiv)

1935 images of the rope traverse on the Dülfer route on Totenkirchl (noted as either Franz Schmid or Fritz Schmitt). The climber is making his way left on the famous "Nose Traverse" on the Totenkirchl. Note the copious use of essential carabiners with this1935 system, each acting as a pulley under rope tension, With this double lead-rope technique with the belayer supplies tension on one rope or the other as needed. This type of mixed free/aid was only considered artificial in the sense that artificial protection (pitons) were used. Historisches AlpenArchiv

Early strong pear-shaped carabiners first appear in the 1920s and became standard equipment by the 1930s. The famous Nose Traverse depicted above was first climbed without carabiners using the Dülfer rope traverse method involving a second rappel rope, then later with carabiners.

Hemp rope slings were safely used for running belays

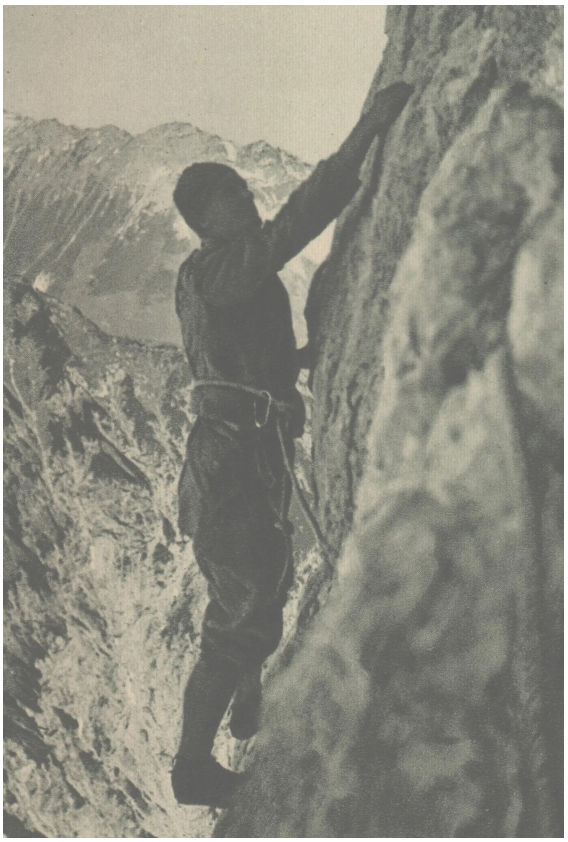
Even into the 1930s, connecting the lead rope to an anchor with a short loop of knotted rope *instead* of a carabiner was still a standard running belay attachment method. What is definitely a big No-No today with nylon ropes, due to the low melting temperature of nylon, is any rope-on-rope dynamic system; the friction of a rubbing rope will quickly cut nylon rope or sling. Hemp and manila slings can withstand higher frictional cutting before failing and were safely used as the primary means to attach a lead rope into a piece of protection for the decades before widespread carabiner use. A hemp or manila rope-on-rope system was strong enough to catch a short fall, and even some long falls (see Piaz chapters). On the other hand, carabiners

An unknown climber illustrating the use of *Seilring*, the method of tying the lead rope into a rope sling before the advent of karabiners.

were favored for climbs involving aid from the rope, as a means to winch oneself upward on a piton using one of the lead ropes, or for a tension traverse where the belayer provides slack as the lead climber maneuvers laterally with rope tension. In the 1920s, most pieces of protection were still tied in with a sling, as having three carabiners would have comprised a top-notch rack, and many climbers would have had none or only a few carabiners on the long climbs in this early era, until the advent of climbs involving the heavy use of artificial aid in the 1930s.

***Note about threading ring pitons*:**
In the age of ring pitons before carabiners, some references mention the need for climbers to untie, then re-tie to thread a ring piton. Climbers in the Elbsandsteingebirge were using this technique on routes with large ring bolts (and long runouts), but in general, the idea of untying and re-tying the lead rope through ring pitons as a standard technique is another myth of the age. There are a few cases referenced in journals of a climber untying and retying the lead rope on long rock routes, but mainly in cases where climbers have come across a fixed piton on established routes. I believe it only happened when climbers did not have a "Seilring" (rope sling), a very standard piece of equipment for climbers who used pitons for protection and belays on first ascents. In other words, why would you thread the eye of a piton (or a ring piton) when you had a knotted sling to attach to the piton to create a running belay? Not to mention rope drag with the small ring of the typical ring pitons of 1910-1914. There are many more references to rope slings (Seilringe) than threading the climbing rope into a ring-piton. In other words, in the Eastern Alps prior to the widespread availability of carabiners, the need to untie/retie the lead rope was generally only employed by unprepared climbers (ohne Seilringe—without slings) who were likely repeating a route with fixed pitons in place.

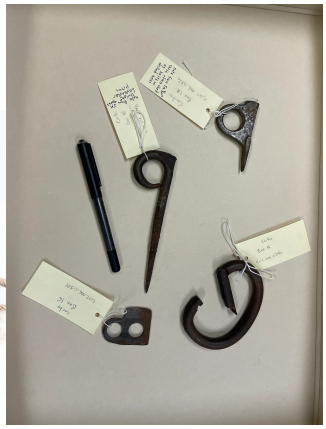
Oval Carabiners 1930s and beyond
By the 1930s, steel oval carabiners with parallel sides and symmetric radius curves became a standard climbing carabiner design, and climbing with carabiners became the normal practice. It is likely that August Schuster organized the first mass-produced steel carabiners made specifically for climbing in the late 1920s or early 1930s. The first American carabiners were likely the steel oval carabiners made for the US Army. The next carabiner breakthroughs will appear after WWII with lighter aluminum ovals with a pinned gate, then the D-shaped carabiner designed to lessen the loading on the gate opening, as well as many other shapes and types. After the 1930s, pear-shaped carabiners disappear for several generations and only become standard again in the 1980s as a preferred locking harness carabiner.

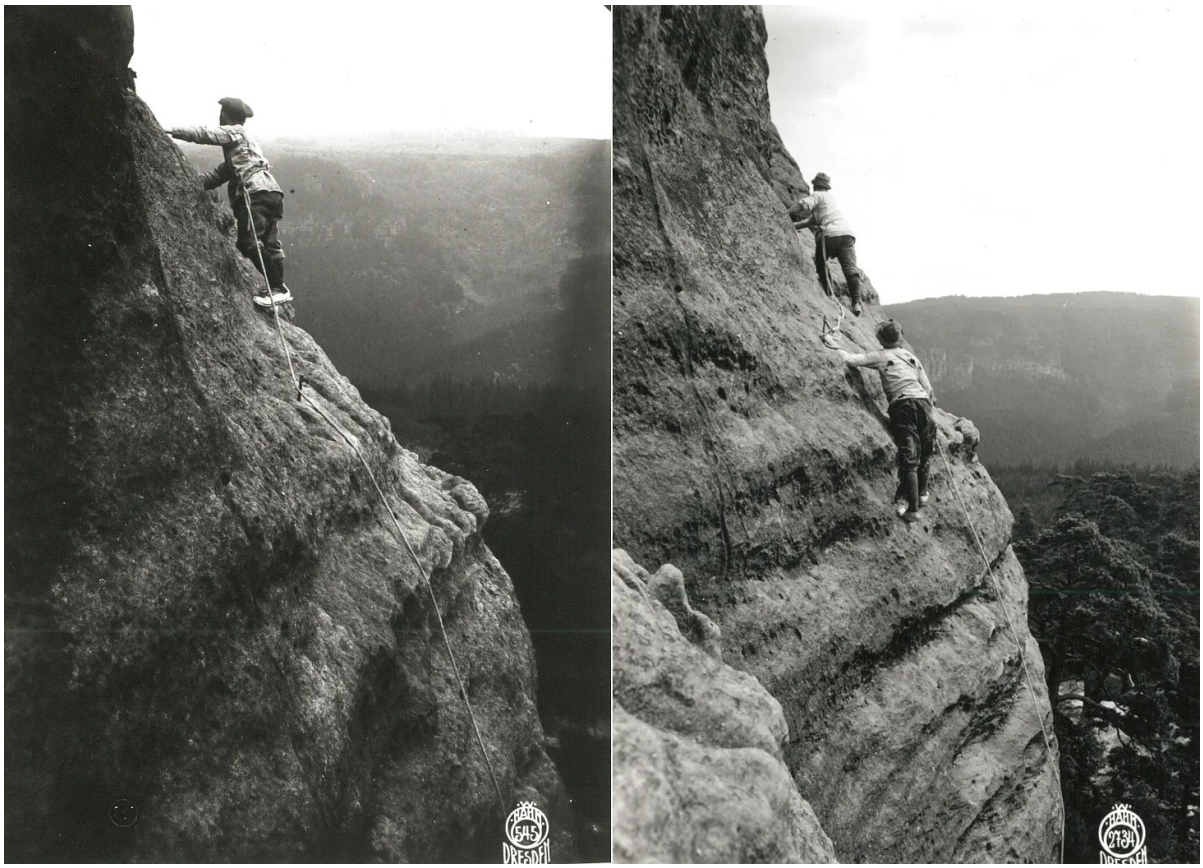


Trenker, 1935. Note the large pear-shaped carabiner.

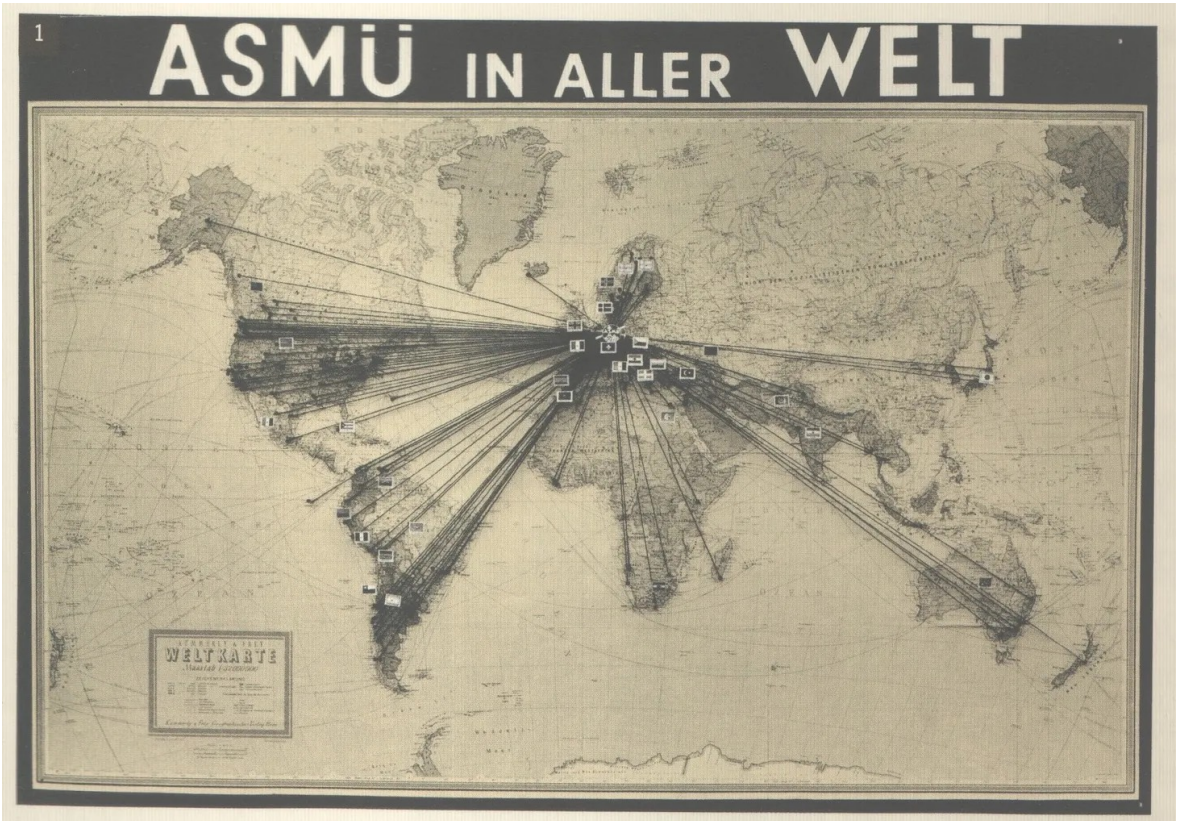
More collections and tidbits:

The Neptune collection with Michael Houtzer and Eric Doub in Boulder (7/2022)

“Antique Scrap Collection”, Hermann Huber, 1950s.

more goodies in the AAC Harvey Carter collection.

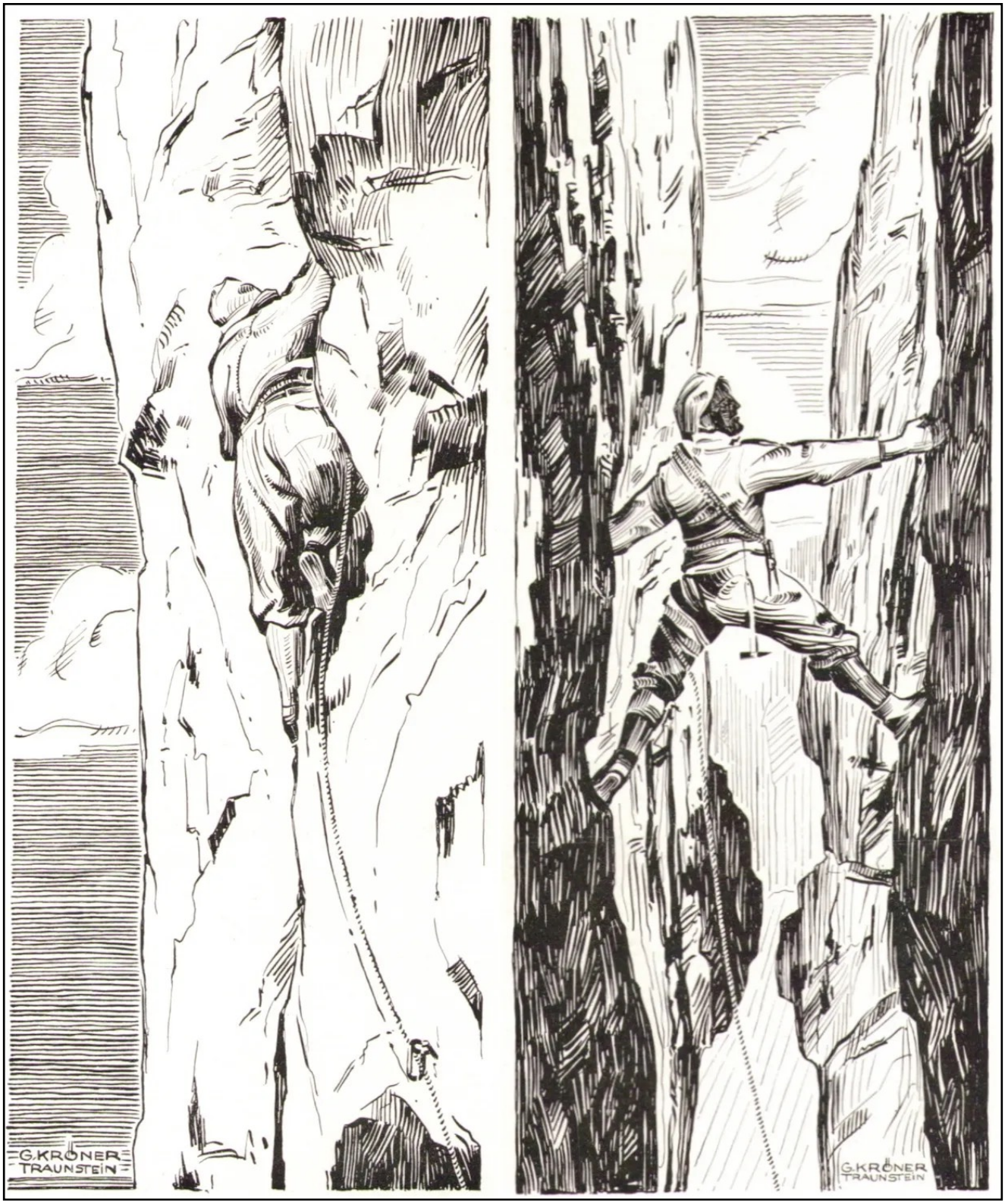


Two photos of the same climb in the Elbsandsteingebirge. Left: 1911, the rope passes over fixed piton. Right, c1919: rope clipped into a strong carabiner. The first strong climbing carabiners were possibly first adopted from the mining industry for free climbs in the Elbsandsteingebirge (see Appendix). Walter Hahn photographs courtesy Deutsch Fotothek.

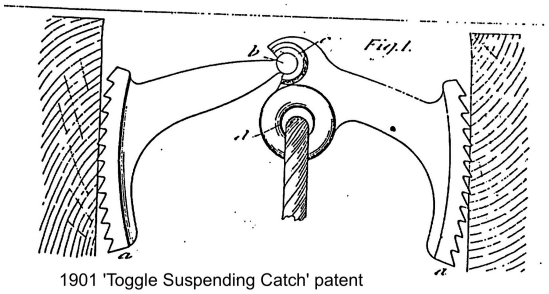


Wearing with pride this world map all marked with remote places, in which one - reliable as always - ASMü goods delivered: South America, Alaska, Japan and New Zealand country, across the globe there were - and there are - satisfied Schuster customers!

August Schuster invented and distributed climbing tools all over the world that were essential for the hardest bigwall climbs of the first four decades of the twentieth century. Flori Schuster writes (2022): *"My grandfather let his own experience on the mountain flow directly into the development of new products. He then tested the results again on the wall, which is how the famous Schuster pitons were created, which are used as an aid when climbing and to secure the climber. They hit the mountaineering scene as a real hit and marked a new era of alpine safety. No piece of equipment was left untouched, people questioned, studied and experimented, always with the intention of making the adventure of mountaineering safer. His highly functional inventions contributed to the fact that the name August Schuster Munich, abbreviated to ASMü, was registered as an international trademark in 1926."*

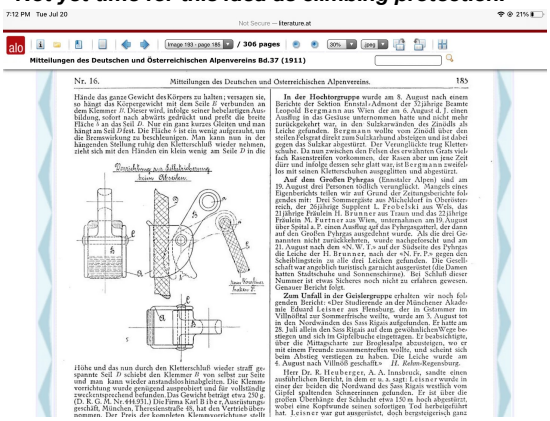

G.KRÖNER
TRAUNSTEIN
G.KRÖNER
TRAUNSTEIN

New ideas:



1901 'Toggle Suspending Catch' patent

Not yet time for this idea as climbing protection.



Mitteilungen des Deutschen und Österreichischen Alpenvereins Bd.37 (1911)

Nr. 16. Mitteilungen des Deutschen und Österreichischen Alpenvereins. 183

Hände das ganze Gewicht des Körpers zu halten; versagen sie, so hängt das Körpergewicht mit dem Seile *B* verbunden an dem Klemmer *N*. Dieser wird, infolge seiner belastigten Ausbildung, sofort nach abwärts gedrückt und preßt die breite Fläche *b* an das Seil *D*. Nur ein ganz kurzes Gleiten und man hängt am Seil *D* fest. Die Fläche *b* ist ein wenig aufgerauht, um die Brennwirkung zu beschleunigen. Man kann nun in der hängenden Stellung ruhig den Kletterschluß wieder nehmen, zieht sich mit den Händen ein klein wenig am Seile *D* in die

Höhe und das nun durch den Kletterschluß wieder straff gespannte Seil *D* schiebt den Klemmer *N* von selbst zur Seite und man kann wieder anstandslos hinabgleiten. Die Klemmvorrichtung wurde genügend ausprobiert und für vollständig zweckentsprechend befunden. Das Gewicht beträgt etwa 250 g. (D. R. G. M. Nr. 444.931.) Die Firma Karl Bihler, Ausrüstungsgeschäft, München, Theresienstraße 69, hat den Vertrieb übernommen. Der Preis der kompletten Klemmvorrichtung stellt

In der Hochtorgruppe wurde am 8. August nach einem Berichte der Sektion Ennstal-Admont der 32jährige Beamte Leopold Bergmann aus Wien der am 6. August d. J. einen Ausflug in das Gesäuse unternommen hatte und nicht mehr zurückgekehrt war, in den Sulzkarwänden des Zinödls als Leiche gefunden. Bergmann wollte vom Zinödl über den steilen Felsgrat direkt zum Sulzkarhund absteigen und ist dabei gegen das Sulzkar abgestürzt. Der Verunglückte trug Kletterschuhe. Da nun zwischen den Felsen des erwähnten Grats vielfach Rasenstreifen vorkommen, der Rasen aber um jene Zeit dürr und infolge dessen sehr glatt war, ist Bergmann zweifellos mit seinen Kletterschuhen ausgeglitten und abgestürzt.

Auf den Großen Pyhrgas (Ennstaler Alpen) sind am 19. August drei Personen tödlich verunglückt. Mangels eines Eigenberichtes teilen wir auf Grund der Zeitungsberichte folgendes mit: Drei Sommergäste aus Micheldorf in Oberösterreich, der 26jährige Suppleut L. Frebelski aus Wels, das 21jährige Fräulein H. Brunner aus Traun und das 22jährige Fräulein M. Furtner aus Wien, unternahmen am 19. August über Spital a. P. einen Ausflug auf das Pyhrgasgatterl, der dann auf den Großen Pyhrgas ausgedehnt wurde. Als die drei Genannten nicht zurückkehrten, wurde nachgeforscht und am 21. August nach dem »N. W. T.« auf der Südseite des Pyhrgas die Leiche der H. Brunner, nach der »N. Fr. P.« gegen den Scheiblingstein zu alle drei Leichen gefunden. Die Gesellschaft war ungeübt turistisch garnicht ausgerüstet (die Damen hatten Stadtschuhe und Sonnenschirme). Bei Schluß dieser Nummer ist etwas Sicheres noch nicht zu erfahren gewesen. Genauer Bericht folgt.

Zum Unfall in der Geislergruppe erhalten wir noch folgenden Bericht: »Der Studierende an der Münchener Akademie Eduard Leisner aus Flensburg, der in Gstommer im Villnößtal zur Sommerfrische weilte, wurde am 3. August tot in den Nordwänden des Sass Rigais aufgefunden. Er hatte am 28. Juli allein den Sass Rigais auf dem gewöhnlichen Wege bestiegen und sich im Gipfelbuche eingetragen. Er beabsichtigte, über die Mittagscharte zur Brogleshütte abzusteigen, wo er mit einem Freunde zusammentreffen wollte, und scheint sich beim Abstieg verstiegen zu haben. Die Leiche wurde am 4. August nach Villnöß geschafft. *H. Rohn-Regensburg.*

Herr Dr. R. Heubergen, A. A. Innsbruck, sandte einen ausführlichen Bericht, in dem er u. a. sagt: Leisner wurde in einer der beiden die Nordwand des Sass Rigais westlich vom Gipfel spaltenden Schneerinnen gefunden. Er ist über die großen Überhänge der Schlucht etwa 150 m hoch abgestürzt, wobei eine Kopfwunde seinen sofortigen Tod herbeigeführt hat. Leisner war gut ausgerüstet, doch hergestgetrieb ganz

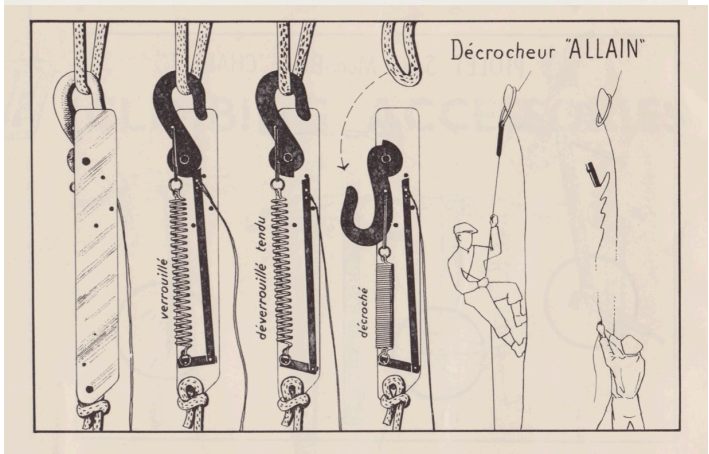
Innovation in 1911, an early rope clamp, though it is unlikely many climbers could afford one, or have need for a rope clamp/ascender at the time.

Pierre Allain, inventor and climber

(Cl. Gugliermina frères)

La face Nord de l'Aiguille du Dru.

——— *Itin. Allain-Leininger, 1935 ; — × inf. : bivouac Allain-Leininger. — × sup. : point atteint par la cordée Lambert, 1935. — — — Tentative Ryan-Lochmatter,1904. — ○ : point atteint par la cordée Ryan-Lochmatter — · — · Itin. de descente Gréloz-Roch, 1932.*



Pierre Allain was one of the earliest climbing inventors to imagine more complex devices, as well as climb the hardest walls.

1930s Climbing Tools (Europe, PartC)

This chapter will cover more the specific tools and techniques developed by the end of the 1930s and used on all the big wall breakthroughs of the period.

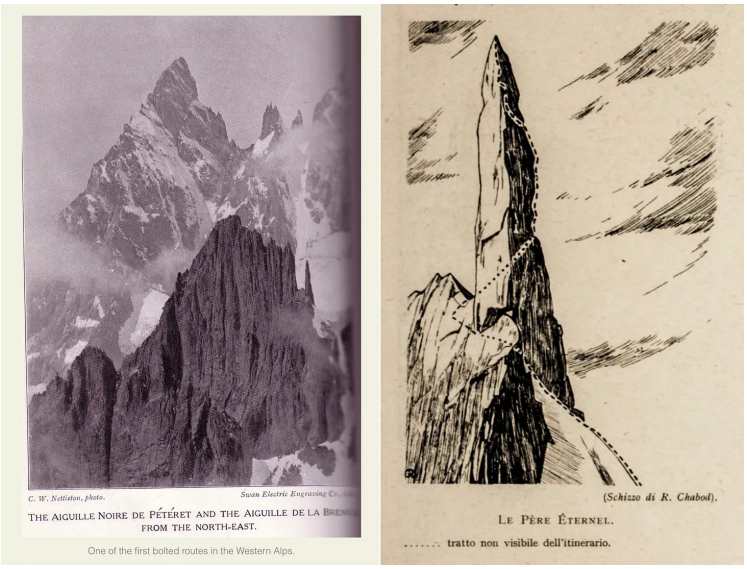
Styles Refine and Diverge
In the 1930s, three basic climbing styles prevailed and were advanced in various areas by talented climbers leading to the development of new tools and techniques:

1. True free climbing: no pitons, ropes and slings used only for safety. In the UK, this style was advanced considerably, starting with the famous Napes Needle, and carried on to various cliffs with varied challenges around Britain. In the sandstone cliffs of Elbsandsteingebirge, the style became very bold with fixed drilled protection placed with community consensus.
2. Artificial climbing: climbing with pitons placed on lead. Often the line between "free" and "aid" blurred, what we would call "French Free" today (sorry France), also often called A0, i.e. the Nose-in-a-day on El Capitan often climbed at 5.11 A0. This style of climbing prioritises efficiency and speed of ascent.
3. Pure Aid climbing: with Comici's ascents of the north wall of Cima Grande and SE arete of Cima Piccola di Lavaredo in August and September 1933, involving pure aid (hook to hook) climbing, a new style was born.

The best big wall climbers of the 1930s were skilled up in all three of these styles, and we will see how the further development of these techniques, primarily in the Dolomites, led to big wall breakthroughs all over the world. But before we get into the new tools and techniques developed specifically for aid climbing, let's review the general development of gear in the 1930s.

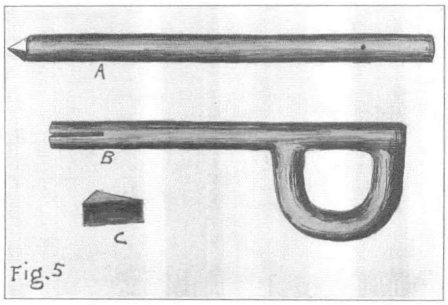
The first big "Aid" climbs. Rivista Mensile del CAI, 1933. Cassin writes of the Cima Grande, "This was the first Dolomite climb in which systematic recourse was had to pitons as an aid to progress. The first 250 m of the face were scaled almost entirely by artificial means."

Bolts--early versions for climbing
No proper history of bolts used for rock climbing has been unveiled. Bolts in rock pre-date the sport of climbing by millennia, going back to the stone age to gain vertical access. The technology advanced during the mining and bridge-building boom of the industrial age, and new concepts including expansion bolts were adopted for climbing (the earliest bolts were often cemented in place). As we have seen, mountain climbing in the 1800s saw many routes becoming heavily equipped for future ascents, such as the Zugspitze and many other prototypical tourist routes and via ferratas that exist today. Tita Piaz possibly had one the most lightweight climbing bolt kits back in the early 1900s for his many ascents, noting his carrier loaded with all the tools of the trade, and later referencing drilling a hole with a steel chisel to place a piton (see Piaz chapters). Interestingly, a recent book on climbing technology, *Alpinisme, La Saga Des Inventions* (Gilles Modica), seems to avoid the topic for the most part, apparently grouping bolts with pitons as "des pitons à expansion" (otherwise a good reference


C. W. Nettleton, photo.
Swan Electric Engraving Co.
THE AIGUILLE NOIRE DE PÉTÉRET AND THE AIGUILLE DE LA BRE
FROM THE NORTH-EAST.
(Schizzo di R. Chabod).
LE PÈRE ÉTERNEL.
..... tratto non visibile dell'itinerario.

One of the first bolted routes in the Western Alps.

Original route description: ***Pere Éternel (Mont Blanc mountain range - Buttress of Brenva). - 1 • ascension. - Pennard Albino, Ottoz Osvaldo, Ottoz Arturo, Grivel Lorenzo, porters from Courmayeur, August 6-7, 1927. …you go up directly to col located at the southern base of the Père Éternel. Surrounding it on the Brenva side, through slabs with small cracks (difficult), the four bearers succeeded on the N.NO. corner, to a sloping shelf, about half a meter wide. From this point, by means of a 4 m pole, a first overhang of the N.NO corner was overcome, which was then climbed again directly along a second overhang (two nails), therefore still for about 10 m. on the edge itself (very exposed, and extremely thin) making small holds in the rock. Then they moved to the left, on the N face, by means of a plate with a tiny slot that offers a small grip for the hands, while the feet have no support. Approximately in the middle of the N. face, the climb was continued directly for about 5 m. by means of slabs with very few holds (the nail at the top of the slabs), then further to the left until you reach the N.NE corner, for which you climb to the top, with climbing astride, very difficult. It took about 8 hours to overcome the obelisk which measures approximately 65 m. in height.***



1932 AAJ: ***This nail is the latest contribution to rock-climbing by a group of Courmayeur guides. It is devised to be used on solid granitic rock, where no natural cracks are to be found. A hole is first drilled in the rock, using a round chisel (a) with a hard-steel point. This chisel is pierced with a hole, so that it may be secured to the wrist of the operator by a stout string. The hole in the rock should be 5 to 8 cm. in depth, and when finished, the special piton (b) is introduced in it, after the wedge (c) has been lightly fitted into the cut at the end of the piton. This is then hammered into the hole, where it will be securely retained by the forced expansion of the wedge. This spike, prepared by Grivel, made possible such feats as the ascent of the vertiginous Père Eternel and the S. ridge of the Aiguille Noire de Péteret. The piton measures 15 cm. in length and weighs 110 gms.***

book on many topics, especially on the French developments, with the most comprehensive history of ice tools—crampons, ice axes, and hardware).

From a climbing first-ascent perspective, bolts and pitons are distinct tools: bolts can be drilled anywhere, while pitons require a natural feature. On remote big walls, a small rack of pitons is still essential equipment for alpine-style ascents, as the proper size piton can be placed speedily and securely to overcome sections as efficiently as possible, taking the time to drill only when absolutely necessary. Early climbers knew this, even Dülfer in 1913 is reported to have carried a stone drill (probably a chisel) on his groundbreaking direct route on the west wall of Totenkirchl, but it was never needed or used. Unlike the early Eastern Alps climber's

complete openness in reporting their piton usage, bolts are rarely mentioned in the early literature, though their use became known from later reports. Their official inauguration to the climbing world was not to come for several generations.

Early bolts specifically manufactured specifically for rock climbing were made by Grivel in the late 1920s, as reported in the 1932 American Alpine Journal in an article called "*Old and New Helps to the Climber*" by Max Stumia. Never accepted as a mainstream primary climbing tool until the late 1980s, bolts are a touchy subject and often a point of pride to ignore in the literature, but later in this series I will outline the state of the art of bolting technology in specific eras, as a lightweight bolt kit is also key to efficient alpine big wall climbing. For the big wall testpieces of the 1930s, bolts were not widely used, as the more natural lines were still being discovered, so will only briefly be touched on in this section.

European Pitons 1930s

During this period, many climbers and small blacksmith shops produced rock climbing pitons, primarily of the Fiechtl flat and horizontal designs of various thicknesses and lengths (see prior chapters). Hermann Huber (b. 1930, inventor at Salewa since 1945), writes, "the ASMü Schuster pitons were more or less monopolistic in Germany for a while. At the workshops in the Bad Obendorf Allgäu mountains, it was not quite industrial mass production, but they must have been quite busy following market demand." The Sporthaus Schuster printed catalogs and mailed them internationally, and in the 1920s and 1930s, the ASMü pitons found their way all over the globe, from the USA and Canada to the Himalaya and Karakoram. A collective of blacksmiths in Fulpmes (Tryol Stubaital) were also producing commercial hardware during this period.

1932
Kletterei-Zubehör
Nr. 2778
Nr. 2778 Spezial-Marke ASMü Eishaken, nach Welzenbach. Doppelseitige Zähnung, garantiert handgeschmiedet. Alleinige Herstellung. Länge: 18, 22, 24 cm . . . . . RM. —.75
Nr. 2780 Handgeschmiedete Mauerhaken m. Ring Stck. RM. —.35
Nr. 2782 Handgeschmiedete Fichtlhaken, hoch und flachkantig Stück RM. —.35
Nr. 2780—2785
Nr. 2784 Seilringe . . . . . RM. —.20
Nr. 2785 Seilkarabiner . . . . . RM. —.75
Nr. 2786 Kletter-Hammer mit Lederschlaufe . . . . . RM. 1.80
Nr. 2788 Schuster ASMü-Eishammer . . . . . RM. 12.—
Markierungspapier bei Einkauf von Kletterartikeln gratis.

1932 ASMÜ equipment. Images courtesy Vertical Archeology. Note the name for the oval carabiner (#2785): "Rope carabiner". The pear-shaped ones were just called "Karabiner".

ASMü gear available in 1937 from Sporthaus Schuster. Note that the larger oval carabiner is called the "Mauerhakenfänger" (literally, wall hook catcher). The price is 0.75Rm compared with "round oval" Karabiner at 0.45Rm. These early "strong" carabiners were intended to be a secure part of the running belay system, in contrast to body-weight applications as with earlier and weaker carabiner designs.

Based on the writings of masters-of-pitoncraft Riccardo Cassin and others, pitons placed by the lead climber were most often removed by the second climber, who also carried a hammer, though with the era's

soft-steel pitons[36] hammered into undulating limestone cracks, often pitons would get "fixed" —left in place—if hammered in too securely. Indeed, popular climbs got progressively "equipped" (and thus easier) with each successive ascent. A typical rack in this era included 15-20 pitons of various sizes, and half as many carabiners. Note that angle pitons do not appear until the 1940s, probably first made as US Army ring-angle pitons during WWII and tested on Seneca rocks in West Virginia (where thousands of pitons were placed during 10th Mountain Division trainings under the leadership of Raffi Bedayn).

Carabiner State-of-the-Art, 1930s

Even though one of Ernst Platz's incredible drawn tutorials dated to 1924 shows an oval-shaped carabiner, the original oval carabiner that we envision today—something strong and as reliable as all the other components in the system— a strong steel full-size oval—was probably first produced under the August Schuster brand ASMü (August Schuster München) in the 1930s. The interlocking "toothed" gate design was state-of-the art until well into the 1940s[37]. Note that the "leader must not fall" adage applied as equally to the early weak carabiners as to the stiff, non-dynamic ropes; the more common smaller pear-shaped carabiners would likely have been the weakest link in the system for the lead climbs in this era[38].

Carabiners in the 1920s and 1930s. As stronger carabiners became more available in the 1920s, they were integrated into the running belay system. Most of the carabiners seen to the mid-1930s are pear-shaped. See Historisches Alpenarchiv for more dated photographs with carabiners. Sometime in the later 1930s, strong steel oval carabiners with reliable gates begin to appear more frequently and become the state-of-the-art design until the invention of the D-shaped carabiner (though D-shaped carabiners are more efficient structurally as most of the load is on the non-gated side of the carabiner, they not as ideal for aid climbing due to "carabiner-shift").

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[36] Also, to remind, the pre-1950 pitons are often mistakenly called "soft-iron" in the literature; however, these pitons, since the turn of the 19th/20th century, were actually made from commonly available mild steels (i.e. 1020). When Salathe began producing pitons of the harder and stronger chrome-moly (4130) steel in the 1940s, people began calling the earlier steel pitons "soft-iron" to differentiate. See previous piton chapters for more details.

[37] Tidbit: even well into the 1970s, Karabiner is spelled with a "k" even in English literature. The French adopted the word Mousqueton, named after another type of short-barrelled rifle, even though the original German word Karabinerhaken was derived from the French word carbine, the gun carried by French military carabineers (or carabiniers—soldiers armed with a carbine rifle), and clipped for carrying with a snap-hook. By the late 1970s, carabiner with a "c" becomes universally fashionable in English literature. The Italian word for a carabiner is moschettone.

[38] Footnote: Raffi Bedayn designed aluminum oval carabiners with an improved pinned gate design—similar to many modern carabiners sold today—and were produced soon after WWII. Pierre Allain designed interesting gate-closure designs, as well as early aluminum "D" carabiners (see Mechanical Advantage Volume 2).

1930's strong steel oval carabiner, from Marty Karabin's collection.1930 Sporthaus Schuster/Jungborn catalogs from Vertical Archeology. It is unlikely the ASMü gear became branded until after WWII, so identifying these earliest steel oval climbing carabiners remains elusive, as the design was produced for decades, with variations as production methods and materials improved.

Racking systems 1930s

…pictures are worth a thousand words:

Ropes 1930s

When we think of natural fiber ropes, we often think of the scratchy hemp ropes we see in hardware stores today. But prior to nylon climbing ropes (appearing after WWII), natural fiber ropes were generally produced at a much greater standard with quality fiber preparation and production. In the 1930s, the best natural-fibre, three-strand ropes were adequate for safe-climbing. Georg Sixt made drop tests on various diameter ropes, and in 1926 it was reported that the best Italian hemp ropes could withstand a 75kg mass falling 15 meters with 12-15cm extension—a long fall that would injure most humans from the high impact forces—yet the rope would not break. Climbers were also beginning to understand the dynamics of climbing rope systems: the energy generated by a fall, and how the energy was absorbed by various parts of the system (see this 1933 article). Quality silk ropes at

Gear Racking Systems for lead climbing. Left: famous piton photo from Der Mensch am Berg by Hans Franz and Kurt Maix. Right: on the Eiger, 1936. Chest harnesses were first described and explained by Georg Meikel (München) in 1911 as a quick way to secure oneself to a second rope.

CORDE DA MONTAGNA

« ... La tragica disgrazia avvenne presso il noto, difficile e pericoloso strapiombo della parete ovest; il compagno del morto si era fermato sopra un piccolo terrazzino, a 18 metri sotto lo strapiombo ed aveva assicurata la corda nel miglior modo, attorno ad uno spuntone di roccia, quando il capo cordata, che aveva quasi vinto lo strapiombo, improvvisamente precipitò, rimbalzando sull'orlo del terrazzino e sparendo nel vuoto. Il compagno trattenendo la corda con tutta forza, attese lo strappo, ma purtroppo la corda non resse e l'infelice precipitò per tutta la parte inferiore della parete ovest. Il cadavere orrendamente sfracellato, fu trovato nel canalone sottostante.... ».

Quante volte abbiamo letto una simile notizia! Noi alpinisti generalmente accettiamo il fatto compiuto, il nostro cordoglio va spontaneo alla famiglia ed agli amici del disgraziato e ci prepariamo a rispondere alla caterva dei pacifici cittadini, che prendono lo spunto per dare addosso all'alpinismo, ed a coloro che intraprendono delle salite pericolose.

Sarebbe bene però che il mondo alpinistico si occupasse delle cause di ogni disgrazia alpina con precise valutazioni tecniche, e ciò per questione di capitale importanza, qual'è il materiale, tipo e trattamento della corda; sappiamo indicare la pelle più indicata per una scarpa di montagna, come dev'essere la chiodatura e come dev'essere trattata prima e dopo l'uso, conosciamo forma e colore degli occhiali da neve, tipo e taglio di un buon vestito da montagna, ecc., ma pochissimi sono gli alpinisti che son competenti in fatto di corde, oggetto di equipaggiamento da cui dipende spesso vita o morte di chi ne fa uso.

E. M.

CORDA RITORTA.

È scopo di queste righe di dare qualche consiglio pratico, chiarendo altresì alcune norme fondamentali.

La corda ideale dovrebbe avere le seguenti qualità:

1° massima resistenza;
2° minimo deterioramento;
3° peso minimo;
4° massima flessibilità.

MERLET

MERLET

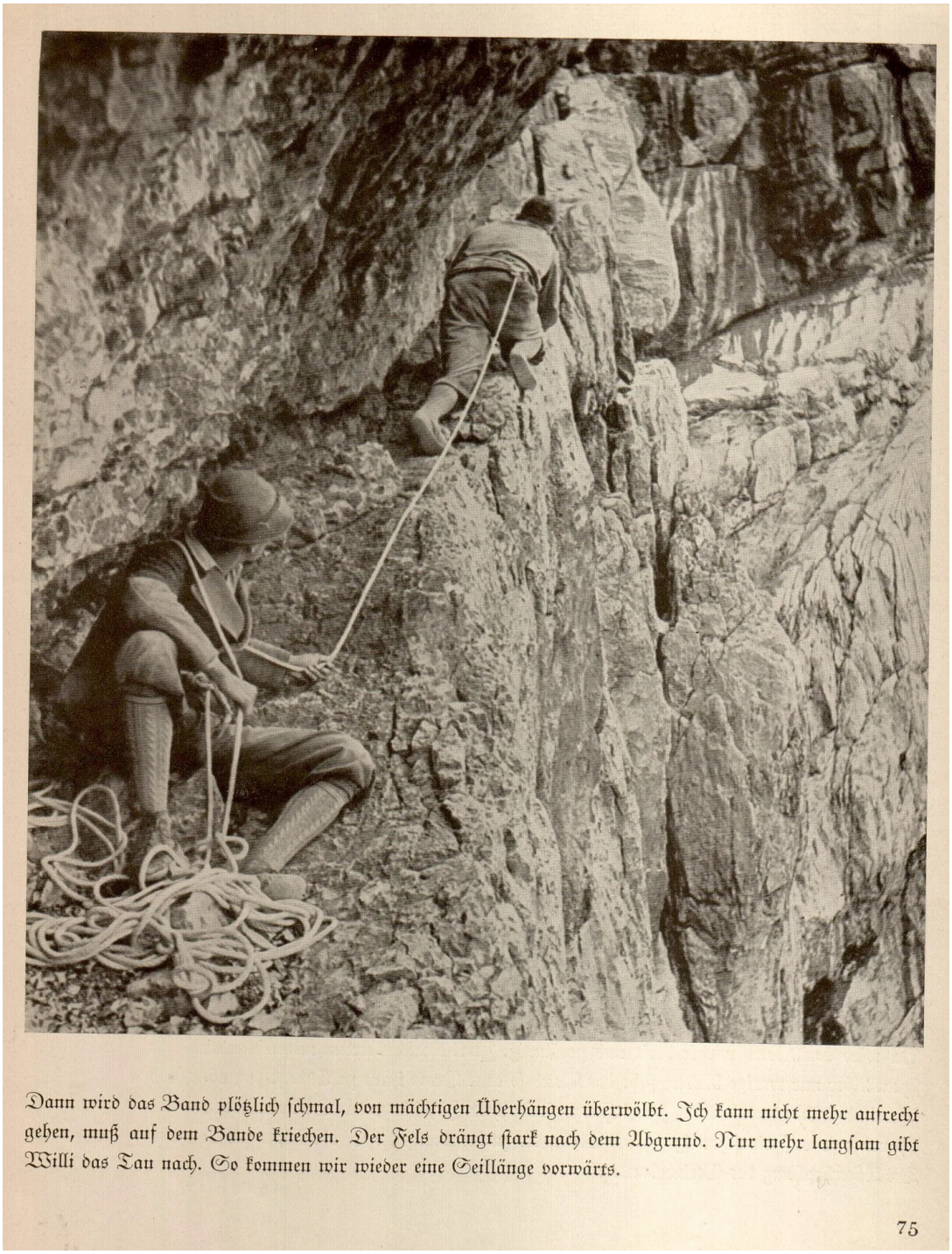
SACCHI DA MONTAGNA marca "MERLET"
PEDULE DA ROCCIA marca "MERLET"
PICCOZZE - RAMPONI - ecc.
CORDA DA MONTAGNA "FÜSSEN"
In vendita presso le migliori Case di sport

The four criteria listed for natural fiber ropes are maximum strength, minimal wear, minimal weight, and maximum flexibility. The Merlet "Füssen" rope was a well-known quality natural-fiber climbing rope. (Rivista mensile del CAI, 1926.)

Long silk climbing rope produced in Japan, looped and coiled in original cardboard box 'with ACC note regarding use' at the Whyte Museum.

Before nylon, the first "dynamic" climbing ropes were produced from silk in Japan. Silk ropes are strong and had much more ability to absorb energy safely than the manila and hemp ropes used by the rest of the world.

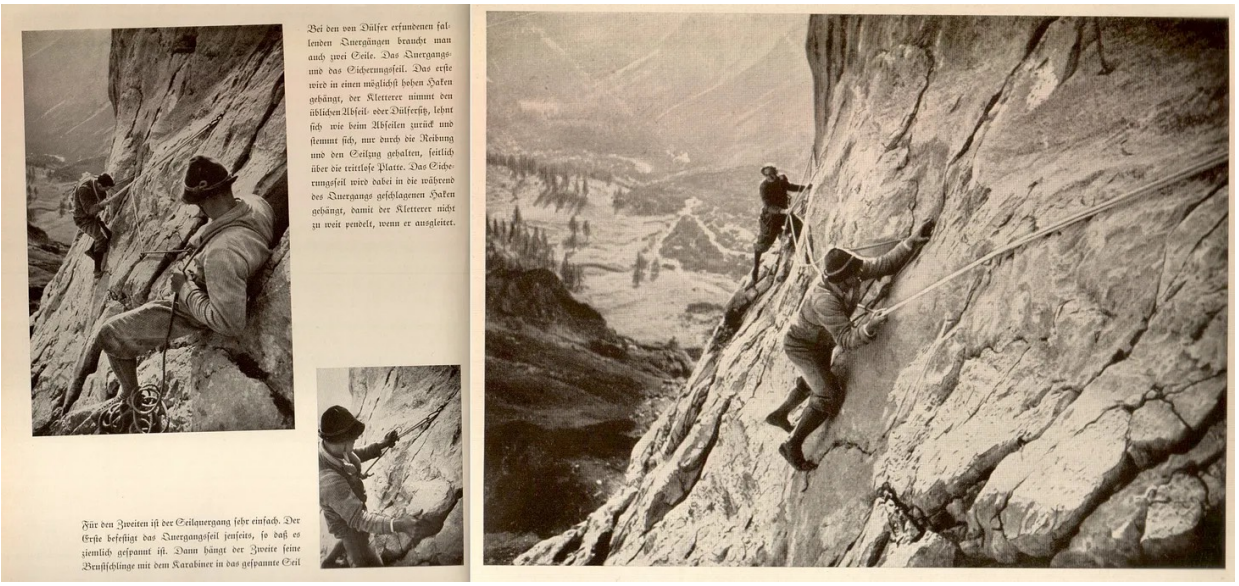
the time were also strong enough for climbing, and much more flexible, yet 20 to 40 times the cost of a good hemp rope. Standard rope lengths were 40m and the standard diameter for a single climbing rope was 12mm. With the double lead-rope technique (described below), two 10mm diameter ropes were commonly used. (DuÖAV and CAI).



Dann wird das Band plötzlich schmal, von mächtigen Überhängen überwölbt. Ich kann nicht mehr aufrecht gehen, muß auf dem Bande kriechen. Der Fels drängt stark nach dem Abgrund. Nur mehr langsam gibt Willi das Tau nach. So kommen wir wieder eine Seillänge vorwärts.

75

The most commonly depicted belay method in Europe in the 1930s. Rope going over the shoulder and under the arm, from a braced position. Inherent in body-belay systems are dynamic properties, as the friction of the rope around the body dissipates energy. The concept of an intentional "dynamic belay" to minimize impact force on the climber was not yet practiced in Europe. (Franz/Maix, 1935).


Bei den von Dülfer erfundenen fallenden Quergängen braucht man auch zwei Seile. Das Quergangs- und das Sicherungsseil. Das erste wird in einen möglichst hohen Haken gehängt, der Kletterer nimmt den üblichen Abseil- oder Dülfersitz, lehnt sich wie beim Abseilen zurück und klemmt sich, nur durch die Reibung und den Seilzug gehalten, seitlich über die trittlose Platte. Das Sicherungsseil wird dabei in die während des Quergangs geschlagenen Haken gehängt, damit der Kletterer nicht zu weit pendelt, wenn er ausgleitet.
Für den Zweiten ist der Seilquergang sehr einfach. Der Erste befestigt das Quergangsseil jenseits, so daß es ziemlich gespannt ist. Dann hängt der Zweite seine Brustschlinge mit dem Karabiner in das gespannte Seil

Dülfer method of rope traverse using a second, often shorter, rope for abseil. The advantage of this method is the second can also easily abseil the same rope to follow the pitch. Der Mensch am Berg, 1935,

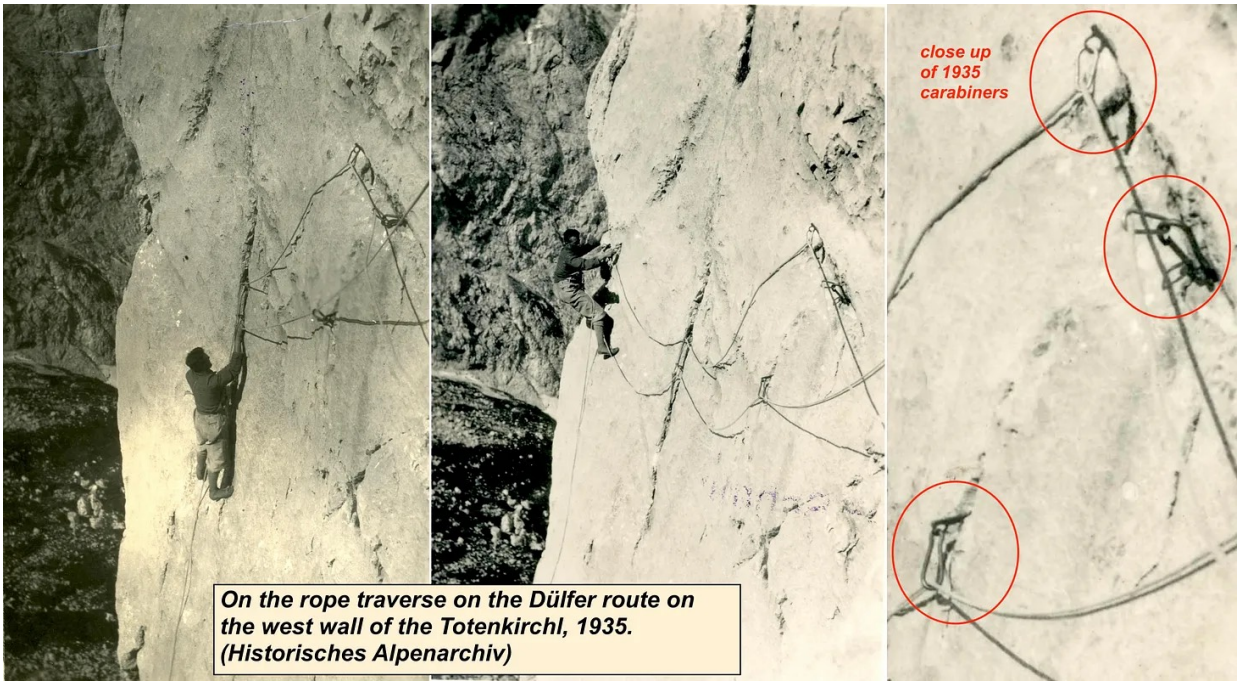
Climbing and Traversing Techniques
By 1931, two methods of rope traverse had been developed:

1. Using a second rope for abseil and traverse per Piaz and Dülfer.
2. Clipping the lead rope(s) into a point of traverse with carabiner as a directional pulley, combined with a good belayer who provides tension to hold the leader and gives slack as needed. Prusik shows the rope traverse with a one-rope system in 1929 as is standard today on big walls, but most climbers in the 1930s were moving to a double rope system, where both ropes belayed the leader.
   Note: With the redundancy of belay ropes, smaller lighter rope diameters could be used, with two 40-meter 10mm ropes becoming standard equipment for this style of climbing. Double lead-rope technique, and still a favourite system for free climbs with tricky protection, also reduces the need for slings to prevent rope drag.

We see both methods in the 1930s:
(This page) Dülfer rope traverse method.
(Next page) Double rope tension traverse method on the Totenkrichl Nose Traverse.

Double Rope Techniques
The double lead-rope technique, using two equal full-length lead ropes, superseded the Dülfer method of taking a shorter second rope only for abseil, and soon evolved into a new universal lead technique. The double lead rope system provided more versatility, and became preferred for the pure-aid technique that Comici, Gervasutti, Cassin and others developed in the 1930s for the biggest and steepest walls.

Every sport climber knows the feeling of being cinched up with the rope by the belayer, using artificial assistance to reposition and discover the means to climb new vertical ground while working out the moves on a hard climb—this was the standard of the 1930s “Grade VI” style—climbing that was not considered “free” nor



1935 images of the rope traverse on the Dülfer route on Totenkirchl (noted as either Franz Schmid or Fritz Schmitt). The climber is making his way left on the famous "Nose Traverse" on the Totenkirchl. Note the copious use of essential carabiners with this1935 system, each acting as a pulley under rope tension, With this double lead-rope technique with the belayer supplies tension on one rope or the other as needed. This type of mixed free/aid was only considered artificial in the sense that artificial protection (pitons) were used. Historisches AlpenArchiv

"aid", but just a modern climbing style, using points of protection and ropes for tension to monkey around, while ascending inspiring cliffs in search for difficulty. Rudatis notes in 1931 regarding the overall "homogenous" balance of difficulties: *"It is fair to remember that driving nails is hard work and fully worth as much as overcoming rock difficulty without artificial aids."* Leigh Ortenberger explains it better in the 1964 American Alpine Journal, not long after the term "free-climbing" came back into general use[39].

"This line between free and artificial climbing is often rather fine indeed and in different areas is defined differently. In the 1920's and 1930's probably few ever considered that help from a second's knee or shoulders, or even an ice axe jammed in a crack, represented "artificial" climbing. In parts of Europe climbing is not considered artificial until slings or stirrups are used along with pitons or expansion anchors; the mere use of tension from such ironmongery is not recognized as something above and beyond " free" climbing."

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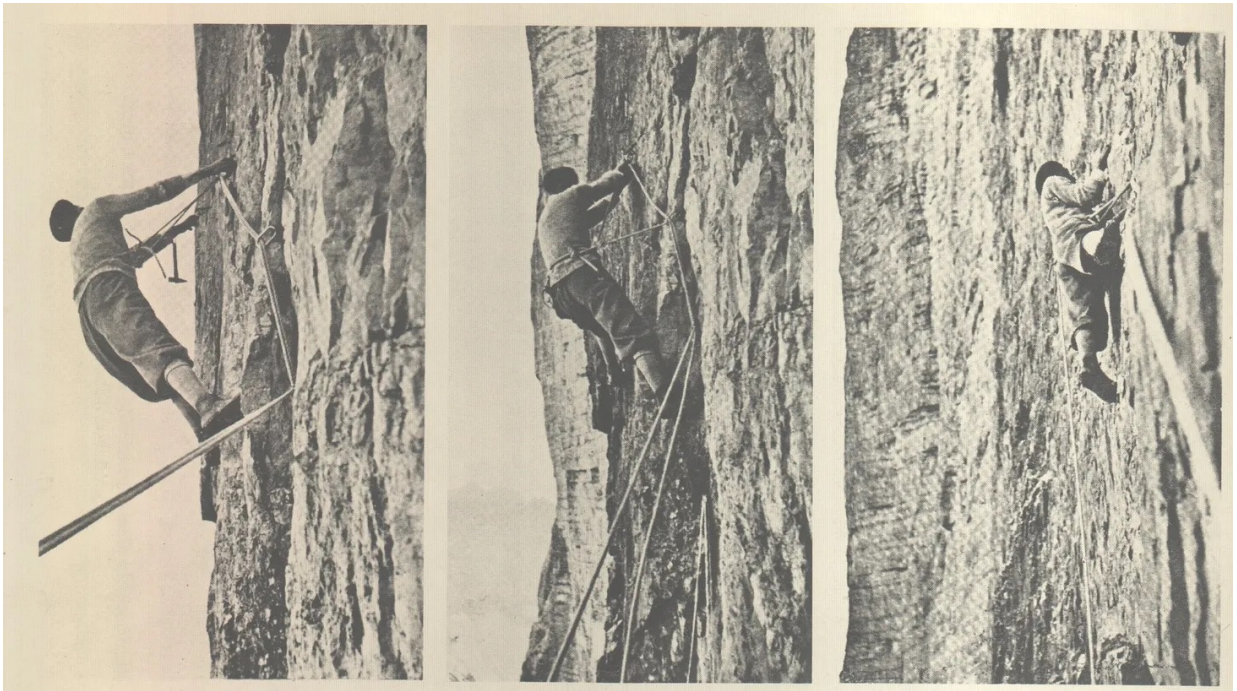
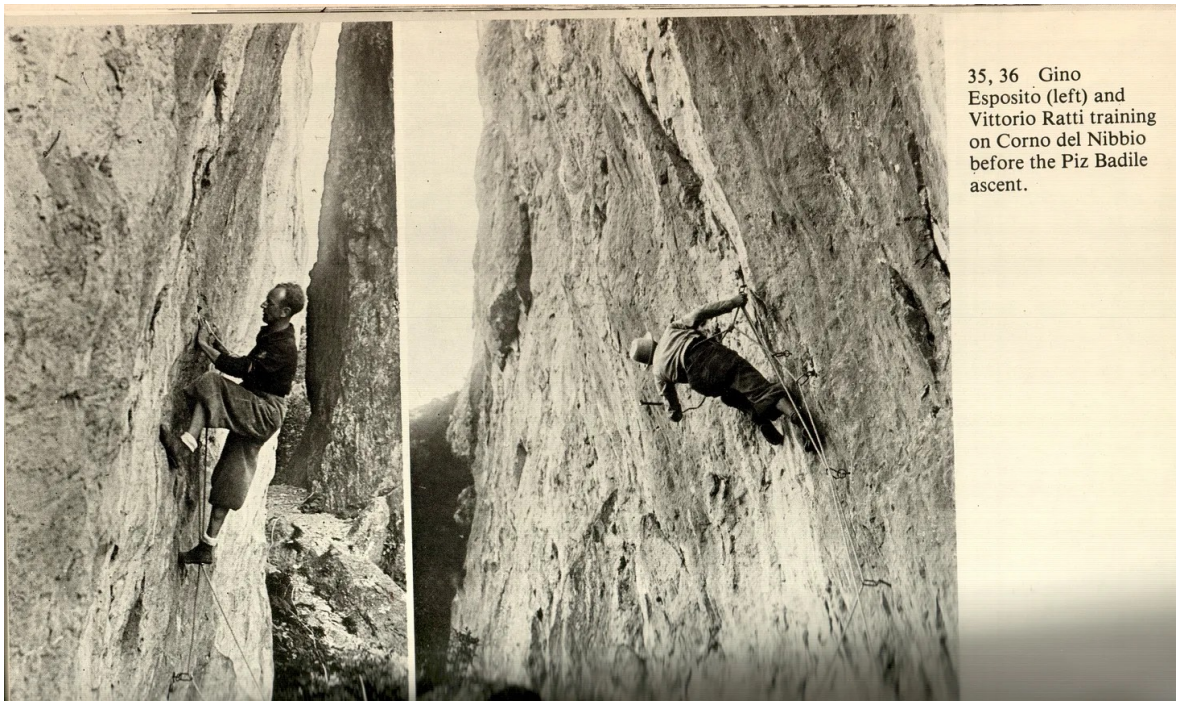
[39] Early use of the term "free-climbing" refers to climbing, without the need for ropes or gear (what would be closest to "onsight solo climbing" today. Witzenmann wrote in the 1902 DuÖAV: "For me, of course, a mountain is "inaccessible" when it cannot be climbed in free climbing. With artificial ads, wall hooks, thrown ropes and the like, eventually every rock peak can be reached". Also Interesting to note that today, ice tools jammed in cracks is once again considered "free".



25 A sequence of photographs showing primitive artificial techniques in use during the first ascent of the North Face of Cima Grande. The method was tiring for both leader and second as the double ropes were held alternately in tension, supporting the leader as he progressed.

The double lead rope technique of the 1930s. Cassin mentions it as "primitive" in comparison to later systems which incorporated aid ladders and a "daisy chain". (Riccardo Cassin, 50 Years of Alpinism,1981). Note also the knot of rope tie-in in front, as we do today: Climbers in the previous era tied the knot in back, because it would be a safer way to fall, avoiding your back bent over backwards in a fall with stiff ropes. But in the 1930s tie-ins are in front, better for A0 maneuvers with the double rope technique (clip rope into piton with carabiner, pull yourself up with rope 2:1 pulley mechanics).

Authors note: This double rope climbing technique persisted even into the 1990s in Europe for routes with short sections of aid. I once offered one of our expedition members to Trango some new 4-step and 5-step A5 aiders and daisy chains for his planned climb of Nameless, but he preferred not having such encumbrances and described his double-rope aid method of clipping one rope into each piece, pulling himself up like a 2:1 pulley, then with the belayer holding him tight, finding a higher placement for the other rope. On the route, he was cinched up on a stopper in a marginal placement halfway up the route, and as he was making the next placement under tension, a shift of weight caused the stopper to pull, resulting in a broken ankle and a heroic rescue by his partner. The method is of course more secure with pitons, and less secure with single-directional clean climbing tools. It also loads each piece with roughly twice the force.



35, 36 Gino Esposito (left) and Vittorio Ratti training on Corno del Nibbio before the Piz Badile ascent.

More pictures of the double lead rope aid technique. Note the way one rope is tensioned by the belayer, holding the climber in place, and the other rope slack and ready to be clipped into the next piece and pulley maneuver. (Cassin, 50 Years of Alpinism)

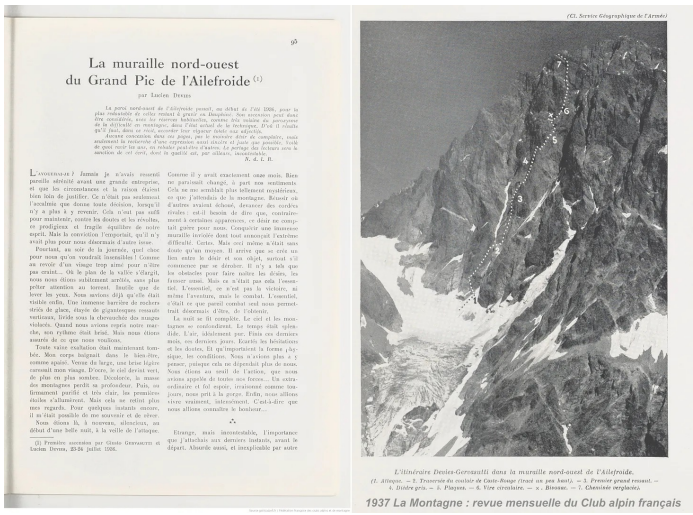
Aid Climbing

Evolving from using pitons as an extra handhold or as a pulley point as a way to make continuous upward progress, further aids were developed to make upward progress more efficient; these become standard big wall equipment, primarily aid ladders and “daisy chains”—shorter cords attached directly to the harness to clip into gear (sometimes called a “cows tail”). A new age of big wall climbing began, and with the new tools and techniques so much more was possible, and bold pioneers took these techniques to alpine and remote big wall climbs all over the world.

Two notable ascents in the Western Alps involving the new tools and techniques:

- NW face of dell’Ailefroide (Guisto Gervasutti, Lucien Devies, 1936)
- Walker Spur on the Grandes Jorasses (Cassin, Esposito, Tizzoni, 1938)

For some great climbing stories of the period in English, see Riccardo Cassin’s excellent history, “Italian climbing between the wars”, published in the 1972 Alpine Journal.

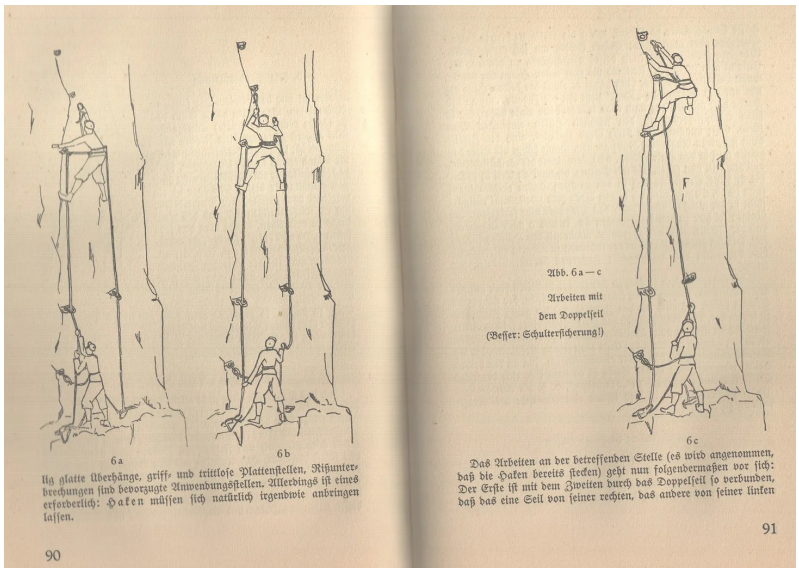


La muraille nord-ouest du Grand Pic de l'Ailefroide (1)

par Lucien Devies

1937 La Montagne : revue mensuelle du Club alpin français

La muraille nord-ouest du Grand Pic de l'Ailefroide.



6a

6b

llg glatte Überhänge, griff- und trittlose Plattenstellen, Rißunterbrechungen sind bevorzugte Anwendungsstellen. Allerdings ist eines erforderlich: Haken müssen sich natürlich irgendwie anbringen lassen.

90

Abb. 6a—c

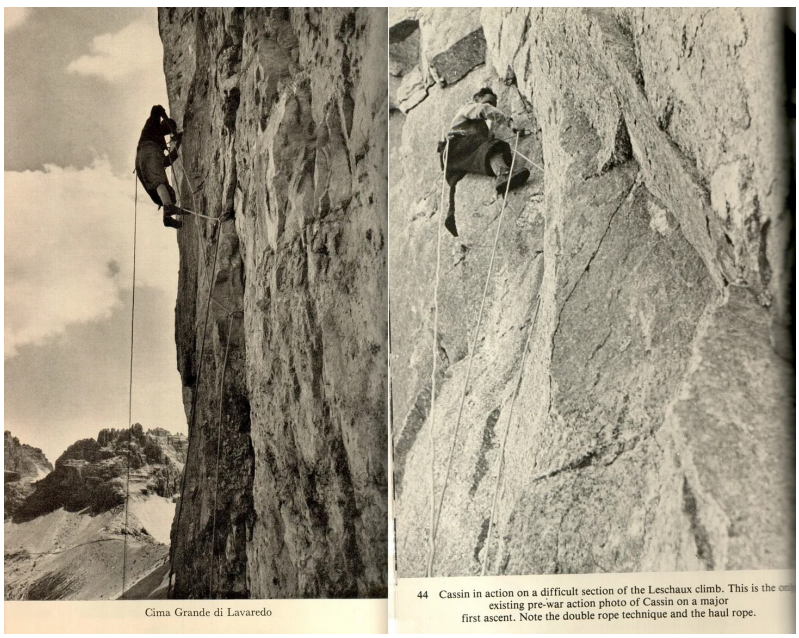
Arbeiten mit dem Doppelseil (Besser: Schultersicherung!)

6c

Das Arbeiten an der betreffenden Stelle (es wird angenommen, daß die Haken bereits stecken) geht nun folgendermaßen vor sich: Der Erste ist mit dem Zweiten durch das Doppelseil so verbunden, daß das eine Seil von seiner rechten, das andere von seiner linken

91

The double rope technique illustrated in Fritz Schmitt's Der Bergsteiger von Heute, 1937. Of course, the double lead rope technique was also an excellent solution for routes with scattered protection and became a favored technique for hard bold free climbing on many cliffs and mountain routes in the 1970s and 1980s (and still today!).

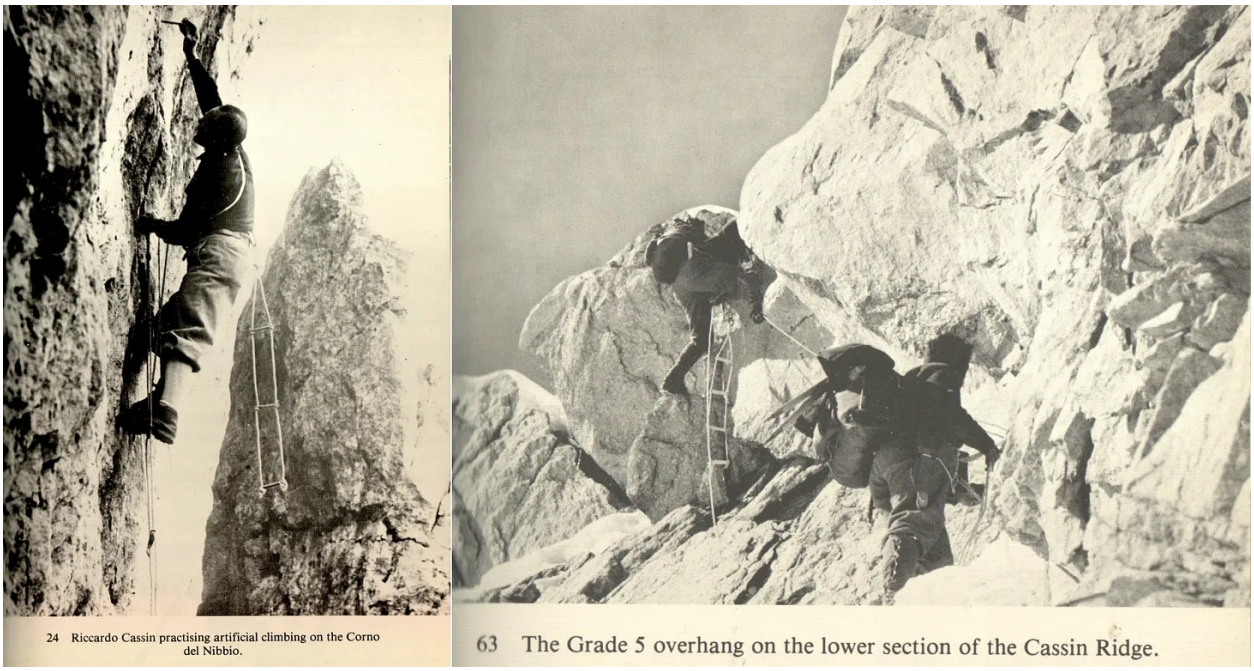


Cima Grande di Lavaredo

44 Cassin in action on a difficult section of the Leschaux climb. This is the only existing pre-war action photo of Cassin on a major first ascent. Note the double rope technique and the haul rope.

Masters of the double lead rope technique, 1930s. Left: Guisto Gervasutti (Gervasutti's Climbs, 1957). Right: Riccardo Cassin (50 Years of Alpinism). The haul rope can be used for pulling up additional gear mid-pitch, and for pulling up packs after each lead

1937 ASMü catalog page and the stamped mark on post-WWII pitons. The text reads: *"Safety and success of a mountain tour involve the most reliable equipment and appropriate clothing. When fighting for the highest mountains in the world and the most difficult walls, ASMü- equipment is a hundred times the best and lasts. That's why the good ones come also (always reflected with their big and little worries about shoemaker) because we not only want to sell goods, but also generously help with advice from experience. The proven ASMü special goods are always used when it comes to something 'big'. Only available from Schuster in München."*



24 Riccardo Cassin practising artificial climbing on the Corno del Nibbio.

63 The Grade 5 overhang on the lower section of the Cassin Ridge.

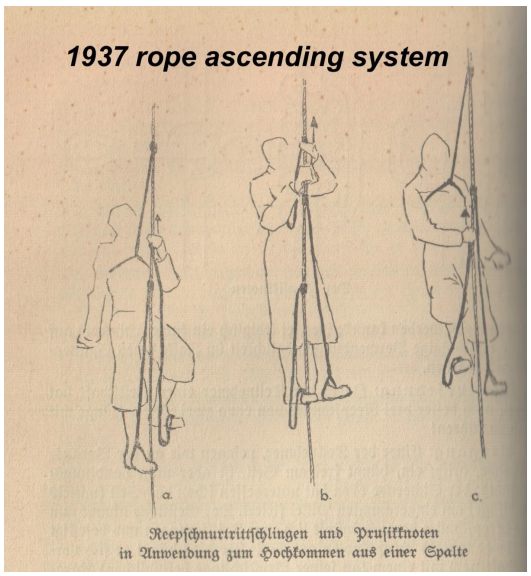
Riccardo Cassin with aid ladders on a practice cliff in Italy, and later on his first ascent of the south face of Denali in Alaska in 1961.

Col des Hirondelles, m. 3484
P. Walker, m. 4096
P. Whymper, m. 4196
P. Croz, m. 4208
P. Elena, m. 4045
P. Margherita, m. 4065
P. Young, m. 4000
Col des Gran. Jorasses, m. 3820
Neg. A. Lorenzoni Novara
Il versante Nord delle Grandes Jorasses
— — —, itin. Meyer-Peters (28, 29 e 30 giugno 1935);
———, itin. Cassin-Esposito-Tizzoni (4, 5 e 6 agosto 1938-XVI)
Neg. G. Tonella
La cordata vittoriosa delle Jorasses:
(da sin.) Ugo Tizzoni, Riccardo Cassin, Gino Esposito

Walker Spur. CAI Rivista mensile del CAI 1937-38

1937 Der Bergsteiger von Heute
Hans Spengler
In der Südwand des Kl. Mühlsturzhorns
7a
7b
Nebenan: Abb. 7a, 7b „Künstlicher Tritt" und (b) Seilzug nach oben

One rope system and early one-step aid ladder (Schmitt, 1937), Note hammer in back pocket.



Fixed ropes up the steep and ledgeless Dolomite walls became a common tactic in the 1930s, and using cinch knots developed by Karl Prusik, safer fixed rope ascension methods were developed (Schmitt, 1937).

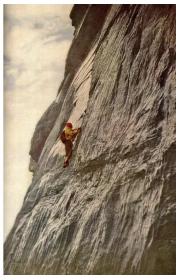
Image from a film on Cassin, showing some sort of "belay seat" using the rope.

Mit Seil und Haken—The Eiger Hinterstoisser Traverse

We'll finish this section with coverage of the 1936 Hinterstoisser traverse on the north wall of the Eiger here involving the original tension traverse techniques. Heinrich Harrer describes the rope traverse in The White Spider:

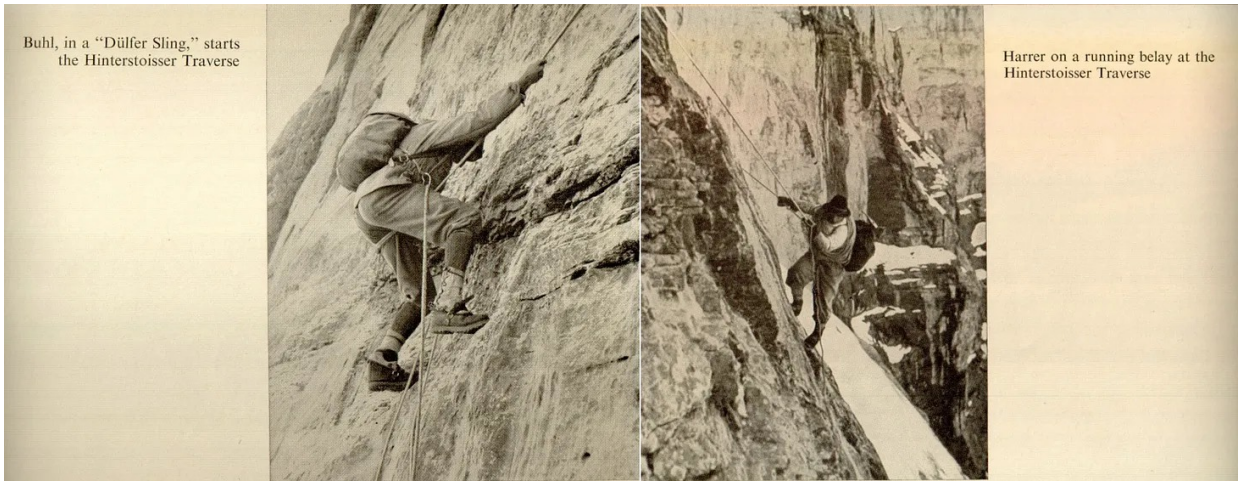
They climbed the exceptionally severe crack below the Rote Fluh successfully. Above it, Andreas Hinterstoisser was the first to achieve the traverse to the First Ice-field, climbing in text-book fashion with the help of the rope. This technique of the "rope-traverse" had already been discovered and developed before the First World War by that master of rock-climbing, Hans Dulfer, during his first ascents of the East Face of the Fleischbank and the West Wall of the Totenkirchl in the Kaisergebirge. In this way Dulfer showed how to line climbable pitches by the use of a diagonal "lift" from the rope on unclimbable ones. The current joke about the Dulfer technique ran: "You go as long as it goes, and when it doesn't go any more, you just do a traverse and go on."

It was this kind of traverse which Hinterstoisser did on the Eiger Face. He had discovered the key to the climb. When they had all completed the traverse, he retrieved the traversing rope. In doing so he threw away the key. If it came to a retreat, the door to the way back was now locked behind them. . . but who was thinking of a retreat?

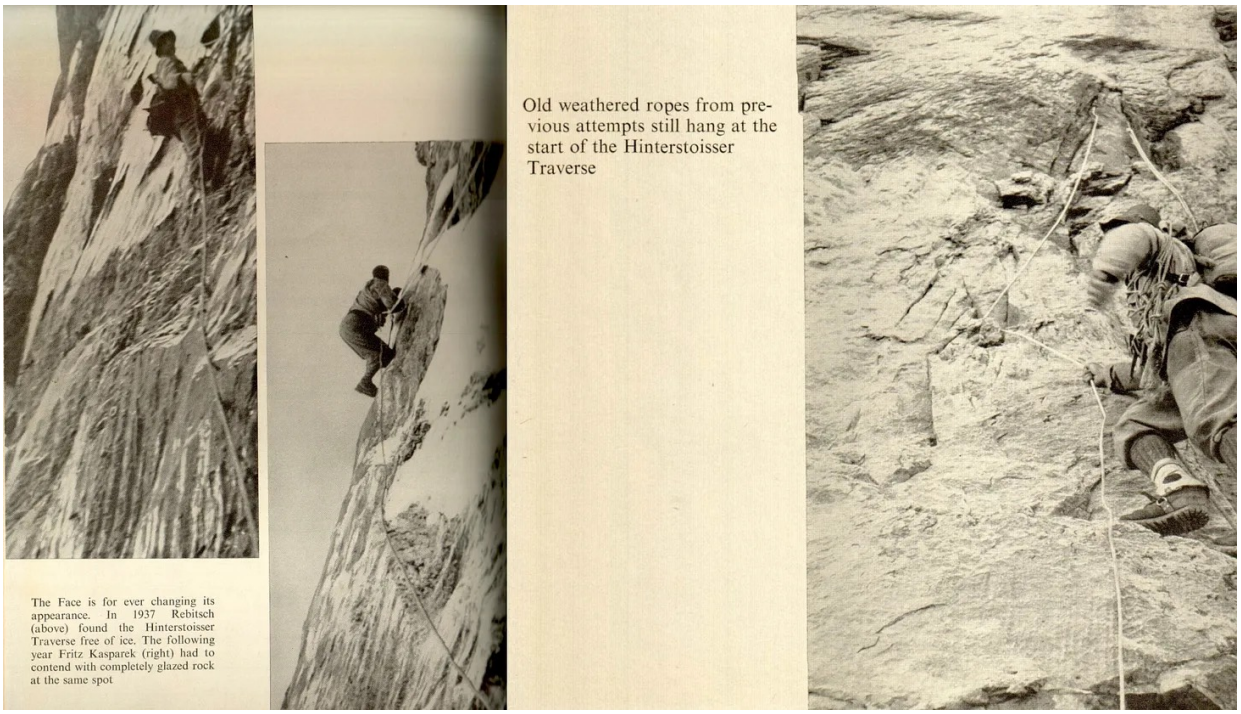


Heinrich Harrer, The White Spider, 1959. Note that for Harrer's 1938 first ascent, the rope was fixed on both ends of the Hinterstoisser traverse from previous attempts, and it is possible to see the long drooping rope in this photo after it had been used to cross. The idea was to rappel down one side of the rope, then tension leftwards to a point where it becomes possible to climb up to an anchor where the climber is in this photo.

Gary Neptune collection. Oval carabiners from Sporthaus Schuster (ASMü) were used on the Eiger, 1938. Ref: Flori Schuster, 100 Years of Sporthaus Schuster, 2013



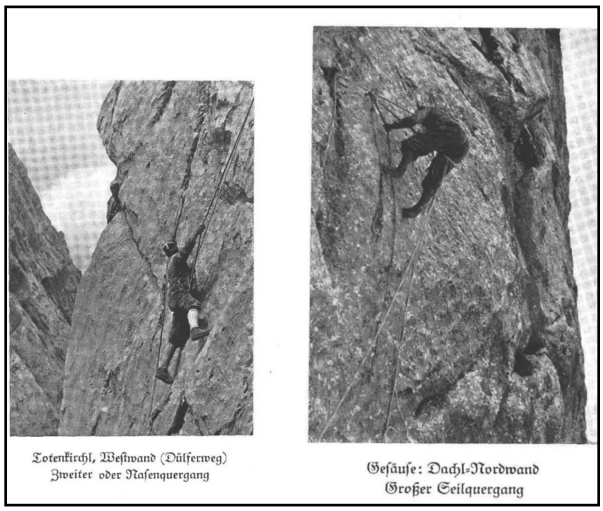
Hermann Buhl (8th ascent, 1952) and Heinrich Harrer (1st ascent, 1938) both using the Piaz/ Dülfer abseil method of tension traverse on the north wall of the Eiger—with the use of a second rope to abseil and for tension on the traverse. (from Heinrich Harrer, The White Spider, 1959.)



The Face is for ever changing its appearance. In 1937 Rebitsch (above) found the Hinterstoisser Traverse free of ice. The following year Fritz Kasparek (right) had to contend with completely glazed rock at the same spot

Old weathered ropes from previous attempts still hang at the start of the Hinterstoisser Traverse

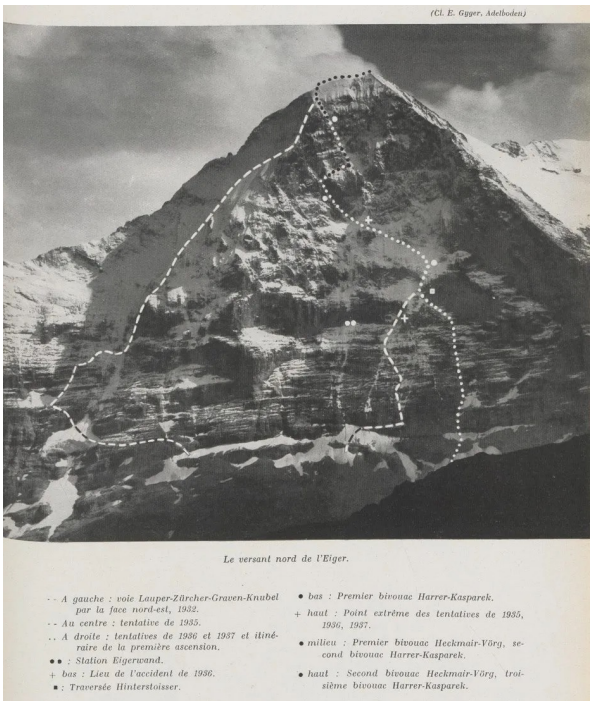
In 2011, the use of the fixed rope remains controversial: "During his Eiger ascent (Dani) Arnold had clipped into the fixed rope on the infamous Hinterstoisser Traverse, a steep rock slab, and had used the rope to assist him across one of the route's trickier bits. Aiding on the rope had drawn criticism from some of his peers, not least Steck, who had free-soloed this section during his speed-record ascent." See Climbing-speed soloing. (images of varied conditions from Heinrich Harrer, The White Spider, 1959.)



Totenkirchl, Westwand (Dülferweg)
Zweiter oder Nasenquergang

Gesäuse: Dachl-Nordwand
Großer Seilquergang

Above: more Seilquergang (rope traverse) pictures from 1938 AV Jahrbuch



(Cl. E. Gyger, Adelboden)

Le versant nord de l'Eiger.

- - *A gauche : voie Lauper-Zürcher-Graven-Knubel par la face nord-est, 1932.*
- - *Au centre : tentative de 1935.*
- . . *A droite : tentatives de 1936 et 1937 et itinéraire de la première ascension.*
- ● ● : *Station Eigerwand.*
- \+ *bas : Lieu de l'accident de 1936.*
- ■ : *Traversée Hinterstoisser.*
- ● *bas : Premier bivouac Harrer-Kasparek.*
- \+ *haut : Point extrême des tentatives de 1935, 1936, 1937.*
- ● *milieu : Premier bivouac Heckmair-Vörg, second bivouac Harrer-Kasparek.*
- ● *haut : Second bivouac Heckmair-Vörg, troisième bivouac Harrer-Kasparek.*

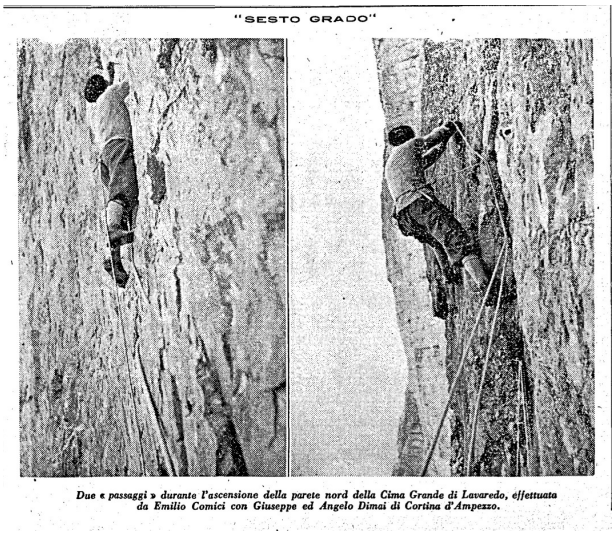
Right: Eiger routes in La Montagne : revue mensuelle du Club alpin français, 1939

(Neg. Schuster - Monaco).
Prima fase della grande traversata a corda doppia della « Direttissima Ovest », al TOTENKIRCHEL.

(Neg. Lucke).
Seconda fase della grande traversata a corda doppia della « Direttissima Ovest », al TOTENKIRCHEL.

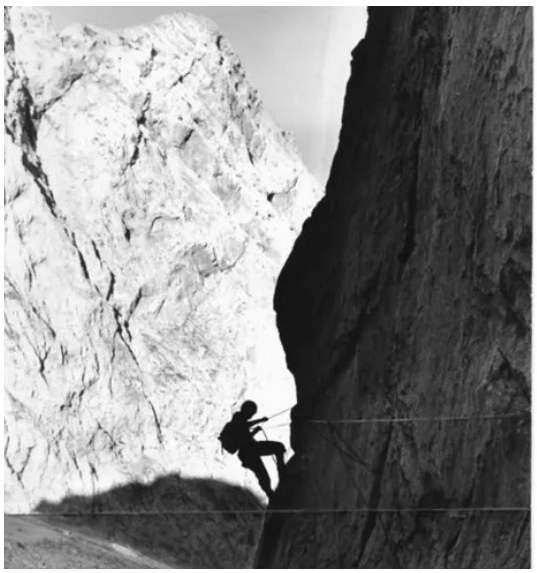
(Neg. Schuster - Monaco).
Terza e ultima fase della grande traversata a corda doppia della « Direttissima Ovest », al TOTENKIRCHEL.
(dietro alla sporgenza s'incontra una fessura verticale, assai più facile).

Another photo sequence of the Dülfer Totenkirchl nose traverse in the Italian journals, 1932 article by Alberto Herron. The final caption reads, "Third and last phase of the great rope traverse of the "Direttissima West", on the TOTENKIRCHEL (behind the ledge there is a vertical crack, much easier)." No matter what the method of traverse, the second would still set up an abseil to follow the pitch.

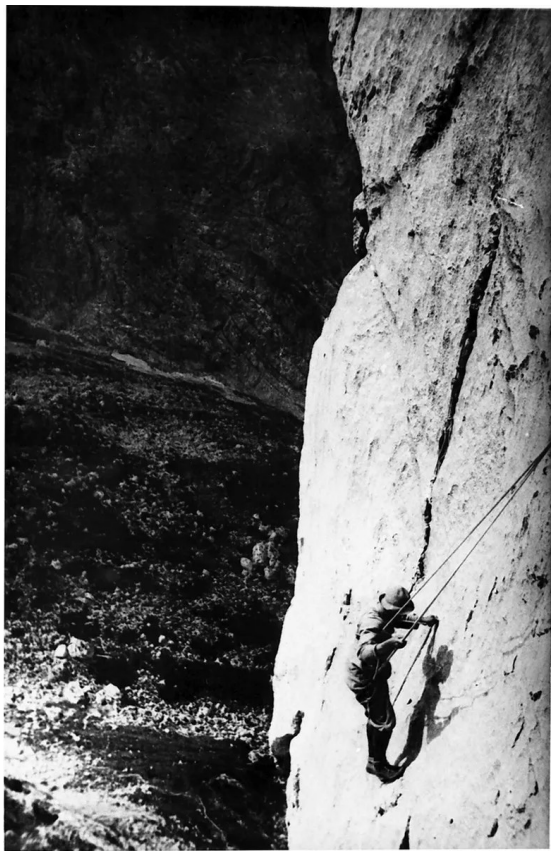


Due « passaggi » durante l'ascensione della parete nord della Cima Grande di Lavaredo, effettuata da Emilio Comici con Giuseppe ed Angelo Dimai di Cortina d'Ampezzo.

News on the "first by nailing" Cima Grande Grade VI in Lo Scarpone, Oct. 1933.

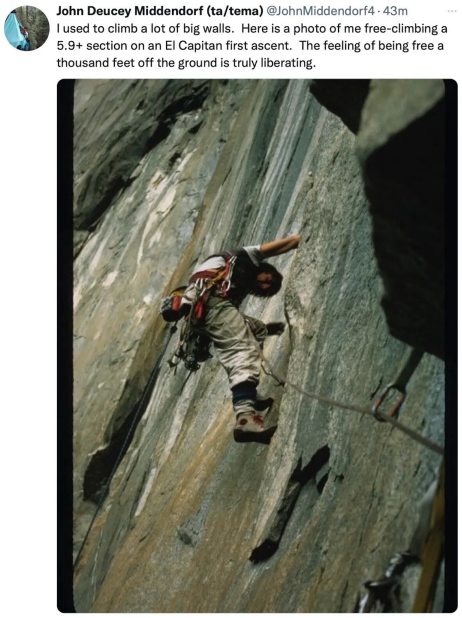


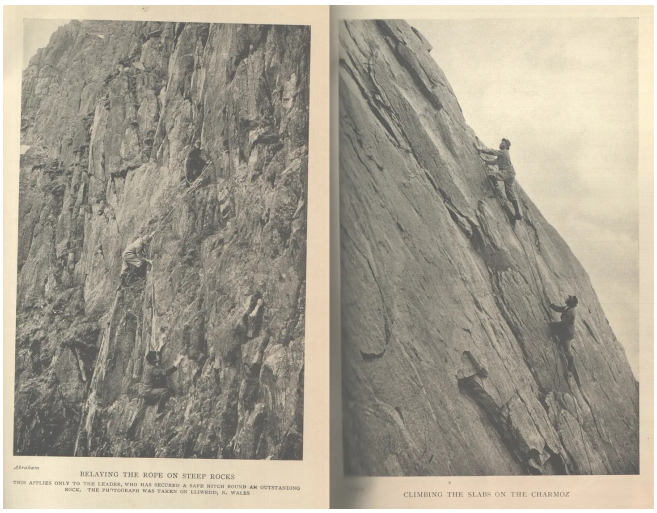
Same location as the photo above on the Totenkirchl, a climber in the 1970s traversing a rope fixed on both ends (Historisches Alpenarchiv). Nowadays, this section is a bolted traverse and considered an "exciting free climb" to the bomber holds on the arete.



Emil Solleder (1899-1931) on the Totenkirchl Nose Traverse using the Dülfer method of rope traversing. Historisches Alpenarchiv (this photo appears reversed in the archive).

The rope over-the-shoulder braced position belay method in the 1930s in Europe.


John Deucey Middendorf (ta/tema) @JohnMiddendorf4 · 43m
I used to climb a lot of big walls. Here is a photo of me free-climbing a 5.9+ section on an El Capitan first ascent. The feeling of being free a thousand feet off the ground is truly liberating.


RELAYING THE ROPE ON STEEP ROCKS
THIS APPLIES ONLY TO THE LEADER, WHO HAS SECURED A SAFE HITCH ROUND AN OUTSTANDING ROCK. THE PHOTOGRAPH WAS TAKEN ON LLIWEDD, N. WALES
CLIMBING THE SLABS ON THE CHARMOZ

Mechanical Advantages in North American Climbing (Volume 2 to come)

When people think “Mechanical”, what often comes to mind first is machined metal, gears and hammers, grinding and pounding to achieve an objective. But soft, tensile-only components are also mechanical parts of rope and anchor systems, as any engineer doing the calculations recognises. The improvements of rope-piton-link systems in the mid-20th century cannot be underestimated in what new risks climbers were willing to take on the vertical.

In the first half of the 20th century, knowledge of new European climbing techniques spread around the world, filtering into the North American big wall landscapes —the Bugaboos, Rockies, Tetons, Wind Rivers, Adirondacks, and the Sierras. Pure aid techniques, pioneered in the Dolomites, were ever-refined starting with the first big wall ascents in Yosemite in the 1930s; simultaneously, North American climbers tested the limits of free-climbing and falling with piton and rope protection systems.

Volume 2 of this series will cover North American developments and will cover the early climbing experiences of Konrad Kain, who was the arguably the first to bring the European techniques to North American climbing, so we will be re-visiting many of the climbs and techniques covered in this volume.

Information Sharing

At the time, shared knowledge of climbing tools and techniques filtered slowly from Europe, and English language books such as Clinton Dent’s *Mountaineering* (Badminton Library, 1892), Claude Wilson’s *Mountaineering* (1893, price two shillings), and George Abraham’s *The Complete Mountaineer* (1908) were light on “artificial” techniques such as safety anchors. Even well into the 1920s, the only pitons depicted in English language literature were the very heavy eye-bolt round spikes similar to those used for trail building, and impractical for lightweight mountaineering. That would change dramatically in the early 1930s in the United States and Canada, but in the meantime, the improvisation continued.

Although there are occasional references to pitons in North America as iron pins, spikes, stanchions, or eyebolts in climbing contexts (or, for example, as a way to lower wagons down cliffs as the Mormons had done to get to Bluff on the Hole-in-the-rock expedition in 1879), as it was in England, Canada, and New Zealand at the time, if pitons were used in the late 19th/early 20th century for early rock climbing, few were reporting or admitting it. Rock climbing had been advancing steadily, but climbing vertical rock was an adjunct distinct from mountaineering, as most mountains had alternate paths to the summit that did not require gymnastic steep climbing skills. In the tradition of The Night Climbers of Cambridge, by 1900, British climbers were solo free climbing at a high onsight standard, on buildings but also on the varied rock of the British Isles.

In terms of bold gymnastic ability on rock, the standard of free climbing with carefully thought out mechanical protection, the level of technical rock climbing in the Elbsandsteingebirge was beyond anything done in the major ranges for many decades, often incorporating complex acro-yoga type teamwork maneuvers. The history of the region pre-dates any other competitive sports arena in climbing, with pioneer Oscar Schuster’s adventures documented in his diaries (Tagebüchern).

We will finish Volume 1 with notes of an American hero, Oliver Perry Smith, who pushed new standards of gymnastic climbs in the early 1900s in Europe.

OUR ALPS AT HOME.

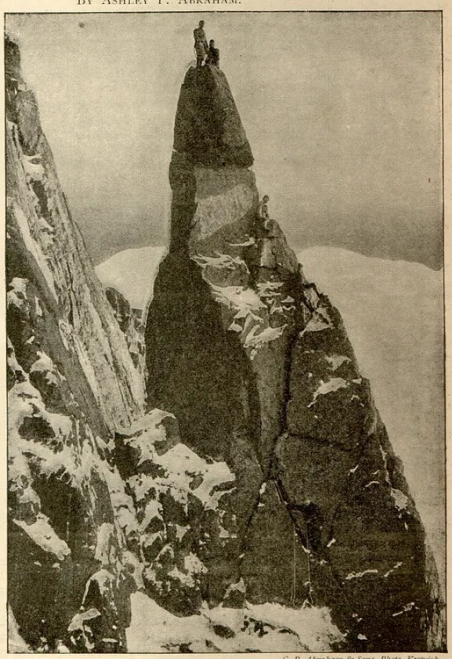
WINTER MOUNTAINEERING IN ENGLAND.

By Ashley P. Abraham.

DR. JOHNSON, in his day, defined a mountaineer as "an inhabitant of wild places, a barbarian, a savage." Doubtless he referred to a summer mountaineer; one who went to Switzerland in the summer season and climbed some, or one, of the lower Swiss peaks.

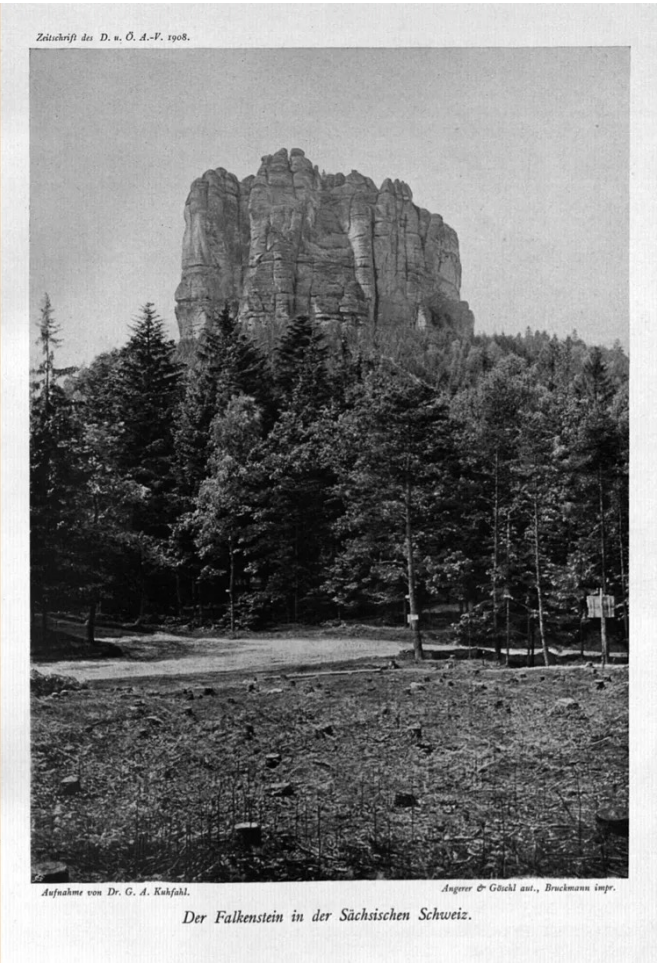
What name he would give, were he living to-day, to those who indulge in winter mountaineering, it would be difficult to imagine, but in spite of this there are doubtless a great number of Englishmen who intend climbing during the coming winter both at home and abroad.

Those who make winter ascents of the great Swiss peaks are, perhaps, not so numerous, for very few are qualified physically as well as financially to undertake these more arduous and difficult excursions. The travelling as a rule is laborious on account of the powdery condition of the snow and the more dangerous state of the mountains, to say nothing of the shorter days. But in the English Lakeland is to be found an excellent substitute for Switzerland. During



G. P. Abraham & Sons, Photo, Keswick.

THE NAPES NEEDLE, GREAT GABLE.

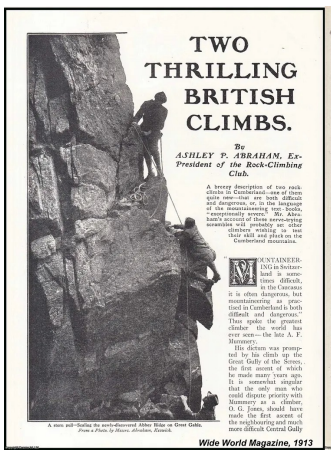


Zeitschrift des D. u. Ö. A.-V. 1908.

Aufnahme von Dr. G. A. Kukfahl. Angerer & Göschl aut., Bruckmann impr.

Der Falkenstein in der Sächsischen Schweiz.

famous free-climbing areas, early 1900s



TWO THRILLING BRITISH CLIMBS.

By ASHLEY P. ABRAHAM, Ex-President of the Rock-Climbing Club.

A breezy description of two rock-climbs in Cumberland—one of them "difficult and dangerous," the other "difficult and dangerous," or, in the language of the mountaineering text-books, "severe and very severe." Abraham's account of these seven-pitch scrambles will probably set other climbers wishing to test their skill and pluck on the Cumberland mountains.

MOUNTAINEERING in Switzerland is sometimes difficult, in the Caucasus it is often dangerous, but mountaineering as practised in Cumberland is both difficult and dangerous." Thus spoke the greatest climber the world has ever seen—the late A. F. Mummery.

His dictum was promptly tested by his climb up the Great Gully of the Screes, the first ascent of which he made many years ago. It is somewhat singular that the only man who could dispute priority with Mummery as a climber, Mr. Haskett-Smith, also made the first ascent of the neighbouring and much more difficult Central Gully

A stern and—finding the next—discovered Abbey Ridge on Great Gable. From a Photo. by Messrs. Abraham, Keswick.

Wide World Magazine, 1913

Scaling the "overhang" on the snow-covered top of the Lyskamm, one of the most dangerous mountains in the Alps. Photo. by Gus. Abraham, Keswick.

WINTER-SPORT MOUNTAINEERING:

AND HOW TO AVOID ITS DANGERS.

By GEO. D. ABRAHAM.

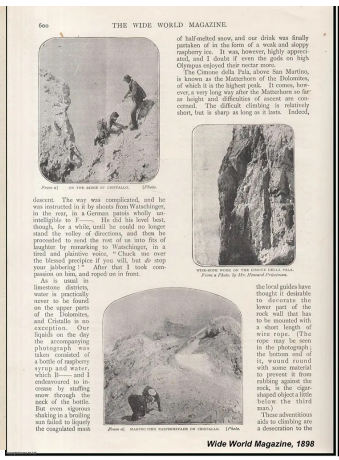
In normal times the winter-sport season of Switzerland would now be in full swing, and there are doubtless a fortunate few still enjoying themselves among the mountains. This article, written by an acknowledged authority, will be read with the utmost interest by all devotees of winter sport and also by those who hope to taste the delights of the snow slopes when the piping days of peace return.

ALONE, white world; azure and alabaster, like a storm-tossed sky suddenly frozen solid, great mountains in all round, stretching away to distances grey and illimitable. Central amidst this land of glistening glory one huge white breaker lifts its head far above all others to twelve thousand feet of utter aloofness. To its icy tip there springs a long snowy ridge, with vast frost-fretted precipices plunging valleywards on either side. Upwards, along the crest of this gigantic wedge of ice, four climbers move wearily, yet warily, for the overhanging curve of snow quiver at times under their human freight.

Success is almost won. It seems that the loftiest of the Bernina giants, Monte Disgrazia, is at last to own submission to the first mid-winter mountaineers.

Then suddenly a loud crash breaks the stillness. Almost instinctively the leader realises the peril. A great mass of the corniced crest has broken away, and with it his companion are disappearing into the abyss. Instantly he flings himself down the opposite side of the ridge. His fall is arrested by the rope, which hangs suspended across the snowy ridge-pole of the peak. On the other side of the ridge his companions dangle over the depths. The rope proves unequal to the fearful

Wide World Magazine, 1916



From H. ON THE ARÊTE OF CHETAILLA. [Photo.

of half-melted snow, and our drink was finally partaken of in the form of a weak and sloppy raspberry ice. It was, however, highly appreciated, and we sat down to our meals on high ledges and enjoyed their entire ease.

The Cimone della Pala, above San Martino, is known as the Matterhorn of the Dolomites, of which it is the highest peak. It comes, however, a very long way after the Matterhorn so far as height and difficulties of ascent are concerned. The difficult climbing is relatively short, but is sharp as long as it lasts. Indeed,

WITH HIS HEAD ON THE SNOWY HILLS. From a Photo. by Mrs. Howard Priestman.

descent. The way was complicated, and he was instructed in it by shouts from Watschinger, in the rear, in a German patois wholly unintelligible to Whymper. He did his level best, and, after a while, "Chuck" found himself in the valley of discovery, and then he proceeded to vend the rest of us into fits of laughter by remarking to Watschinger, in a tired and plaintive voice, "Chuck me over the blessed precipice if you will, but *do* stop your jabbering!" After that I took command on him, and roped on in front.

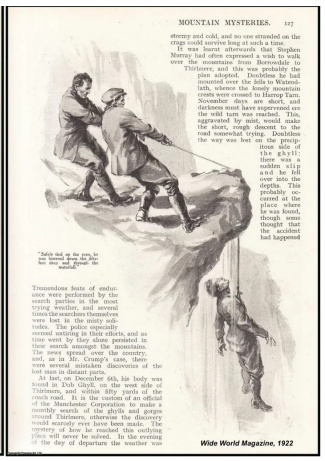
As is usual in limestone districts, water is practically never to be found on the upper parts of the Dolomites, and Cristallo is no exception. Our liquids on the day the accompanying photograph was taken consisted of a bottle of raspberry syrup and water, which B—— and I endeavoured to increase by stuffing snow through the neck of the bottle and then violently shaking in a trembling sun failed to liquefy the congealed mass

From H. MAKING ONE'S SURROUNDINGS OF CRISTALLO. [Photo.

the local guides have thought it desirable to decorate the lower part of the rock wall that has to be mounted with a short length of wire rope. (The rope may be seen in the photograph; the bottom end of it, wound round with some material to prevent it from rubbing against the rock, is the cigarette-shaped object below the third man.)

These adventitious aids to climbing are a desecration to the

Wide World Magazine, 1898



stormy and cold, and no one stranded on the crags could survive long at such a time.

It was learnt afterwards that Stephen Murray had often expressed a wish to walk over the mountains from Borrowdale to Thirlmere, and this was probably the plan adopted. Doubtless he had mounted over the fells to Watendlath, whence the lonely mountain crests were crossed to Harrop Tarn. Here the days are short, and darkness must have supervened ere the wild tarn was reached. This, aggravated by mist, would make the short, rough descent to the road somewhat trying. Doubtless the way was lost on the precipitous side of the ghyll; there was a sudden slip and he fell over into the depths. This probably occurred at a place where he was found, though some thought that the accident had happened

"Table sled, on the cove, he was learned from the Mer four days and through the watershed."

Tremendous feats of endurance were performed by the search parties in the most trying weather, and several times the searchers themselves were lost in the misty solitudes. The police especially seemed untiring in their efforts, and as time went by they alone persisted in their search amongst the mountains. Mr. Crump, in this case, then, as in Mr. Crump's case, there were several mistaken discoveries of the lost man in distant parts.

At last, on December 6th, his body was found in Dub Ghyll, on the west side of Thirlmere, and within fifty yards of the coach road. It is the custom of an official of the Manchester Corporation to make a monthly search of the ghylls and gorges around Thirlmere, otherwise the discovery would scarcely ever have been made. The spot where he was found is such that nothing [illegible] can be solved. In the evening of the day of departure the weather was

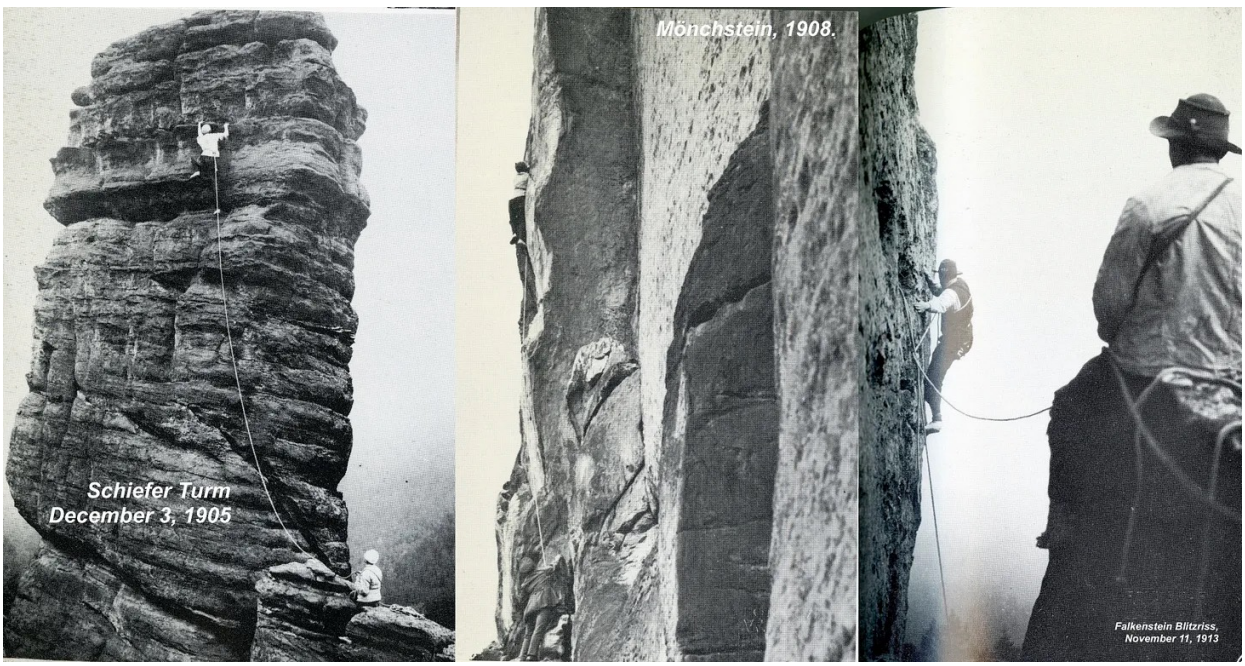
Wide World Magazine, 1922

Oliver Perry-Smith

One of the first Americans to fully embrace rock anchoring climbing technology—pitons and bolts—to advance climbing standards, was Oliver Perry-Smith, born in 1884. Born to a wealthy family in Philadelphia, Perry-Smith's father, a renowned chess champion and poet, was killed in 1899 in Cuba as a captain in the Spanish American War; his mother soon remarried and moved with her new partner to Dresden. Perry-Smith had shown adventurous spirit scrambling up and down cliffs near Bar Harbor, Maine (now Arcadia National Park) where he spent summers growing up but discovered a whole new world of climbing when he moved to Dresden in 1902 as an 18-year old youth, acquiring an early-model Bugatti sports car and climbing throughout Europe. From 1903-1914, he climbed some of the hardest rock climbs in the world in the Elbsandsteingebirge near Dresden, then known as Saxon Switzerland, initially as training routes for the western Alps and then as an end to themselves. Rudolph Fehrmann, a local leading practitioner of visionary direct lines, mentored Perry-Smith, and their partnership found many great adventures involving bold free climbing and solos, but also placing protection on lead.

J, Thornington reports: "Perry-Smith was eager to ascend the Torwächter, and, when it seemed that a competitor might snatch this prize, began to curse and wanted to leave at once. But first they had the blacksmith make safety and rope-off rings. Arriving at the overhang, Perry-Smith drove in the safety ring and roped to his companions. The final wall was covered by thin lichen, still wet from rain, but soon they were on the summit, listening to cheers from friends on a nearby tower." (AAJ, 1964). These sandstone bolts are described as 10mm in diameter, 150mm long, and placed in 14mm holes "with wood or lead pieces to make it fit solidly." These rings took up to two hours to install, sometimes in precarious and exposed positions.

Perry-Smith also climbed many of the newer routes on the steep rock of the Eastern Alps, including new routes on the south wall of Campanile Basso and Vajolet Towers in 1908, where lightweight steel anchors were



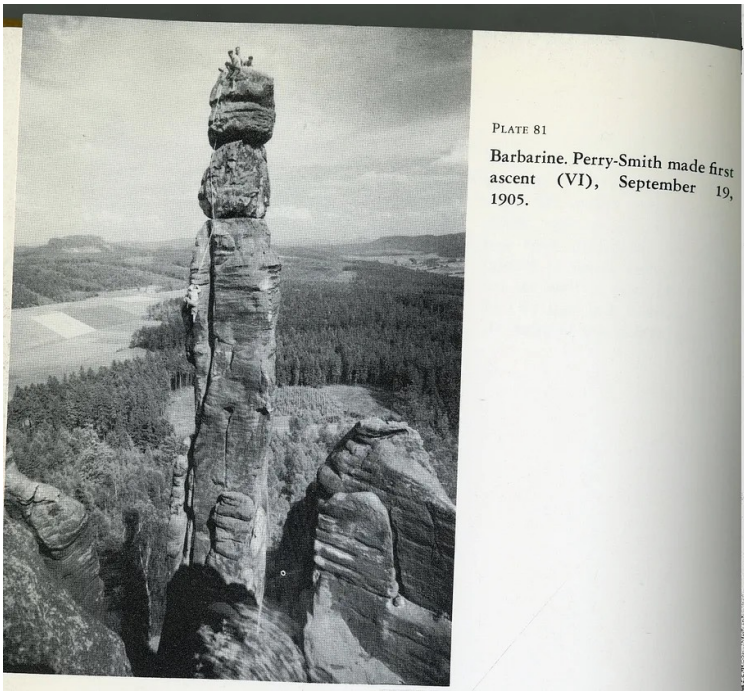
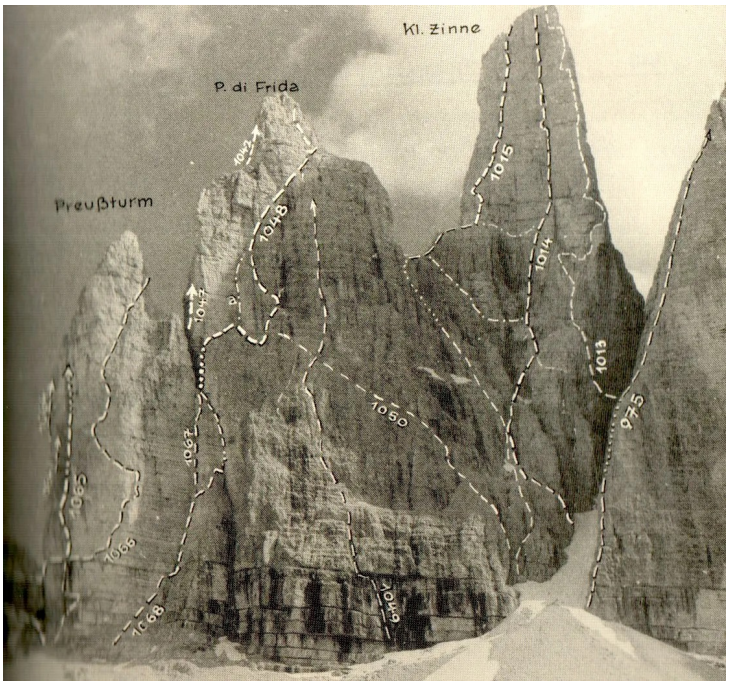


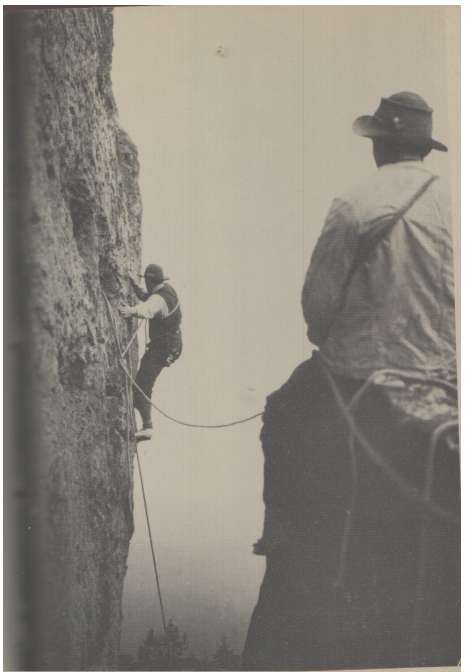
PLATE 81

Barbarine. Perry-Smith made first ascent (VI), September 19, 1905.

From first ascent to classic in 5 years.



Kleine Zinne: Rudolph Fehrmann and Oliver Perry Smith climbed the route marked as "1014" in 1909. The original 1890 Innerkofler/Heversen route is to the left ("1015").



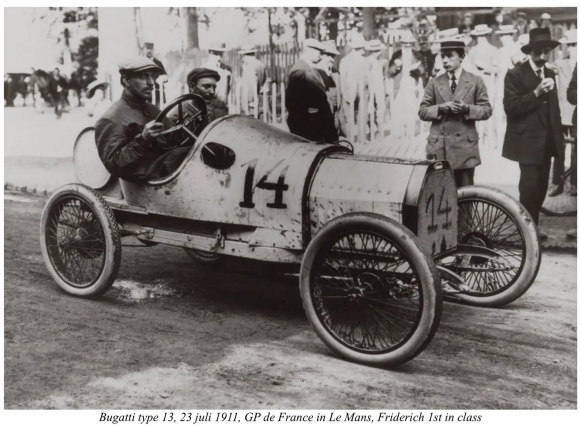
Falkenstein. Photo shows Perry-Smith leading first ascent of south crack (Blitzriss, VI+), November 11, 1913; on traverse to start of crack.

AAJ, 1964

becoming more widely used, referencing the use of pitons (and sometimes the lack of) on these ascents. He also climbed many of the difficult alpine routes in the Western Alps, including the first ascent of the northeast wall of the Weißhorn with G. Winthrop Young and Joseph Knubel (guide), and a solo traverse of the Matterhorn on his third time up the famous Swiss peak.

Few English periodicals reported on Oliver Perry Smith's feats at the time despite a prolific decade, including at least 35 first ascents (a near-complete list of his sandstone climbs here). Hard and bold free climbing was rarely reported in international mountaineering journals at the time, and even in Europe, the first article on the Saxon rock climbing only appears in the 1908 DuÖAV, the same year Fehrmann produced one of the first guidebooks to the area. The only climb of Perry-Smith's outside of the Dresden area noted for many years was the first ascent of Cima Piccola/Kleine Zinne in the Sexterner Dolomites, which Fehrmann had mostly led, yet his first lead of the south wall of Campanile Basso in 1908 was on par with the hardest and boldest free climbs of the era. Perry-Smith also became a champion skier during his time in Europe and was a member of several alpine and ski clubs. In 1911 he married Agnes Adolph, the daughter of a well-known sportsman and hotel owner, and had their first son, Oliver III. In 1914, prior to the outbreak of WWI, he returned with his family to America and settled into a new life.

It does not appear that Perry-Smith did much climbing once he returned to the USA, though later he became friends with Fritz Wiessner after his immigration to USA; Perry-Smith's son reported his father had climbed a route on Wall Face in the Adirondacks with Wiessner many years later. Indeed, it took many decades before the American climbing community learned of the bold climbing and the expert use of new tools and techniques that Oliver Perry-Smith had achieved during his time in Europe.



Bugatti type 13, 23 juli 1911, GP de France in Le Mans, Friderich 1st in class

An early Bugatti--Oliver Perry-Smith also had a Bugatti (4-seater?) while in Europe.

Erinnerungen an die erste Besteigung des Grofsen Wehlturmes.

Von Rudolf Fehrmann, Leipzig.

Jahre sind's nun geworden, seit ich zum ersten Male als Bergsteiger die weltfremden Felsen unserer Sächsischen Schweiz durchstreifte, und nimmer überdrüssig bin ich seitdem zu allen Zeiten hinausgezogen, sei es nachdenklich, träumerisch allein oder in dem freudigen Gefühle, einen alten, lieben Gefährten an der Seite zu haben. So habe ich's seitdem gehalten, immer mit derselben kindlichen Freude an den Wald- und Felsbildern, unbekümmert, ob die Julisonne die Heide ausdörrte oder ob der Winter seinen weichen, weifsen Mantel übers Land schlug. Halten mich dann lange Zeit die dumpfen Mauern der Grofsstadt in ihrem Banne, dann überkommt mich gar oft ein verzehrendes Heimweh nach den Bergen, da zaubert die Phantasie aus der Vergangenheit tausend liebgewordene Bilder herauf, umstrahlt von dem goldigen Glanze, den die Erinnerung über ihre Gebilde giefst. Da höre ich wieder, wie der Wind durch die Kiefernkronen rauscht und sehe, wie er die rötlichen Stämme hin und her wiegt. Und ich sehne mich, dafs es wieder so würde, wie es damals war, damals, als wir in jauchzendem Sprunge über den Bach setzten, als wir uns hindurchwanden durch Brombeerranken und Dornengebüsch. So kommen, gehen die Bilder. Nun sehe ich mich wieder, wie ich an der ausgeglühten Felswand hänge oder wie ich am Abende nach dem Siege über das „grofse Problem" am Fufse der Felsen sitze in jener feierlich-friedlichen Stimmung, die für einige Zeit den ewigen Kampf im Menschenherzen ruhen läfst und es erfüllt mit wonniger Zufriedenheit.

Einige der herrlichsten Blüten habe ich eingeflochten in den immergrünen Kranz meiner Erinnerungen mit der ersten Besteigung des Grofsen Wehlturmes, die ich mit meinen Freunden Perry-Smith und Schueller im Hochsommer 1905 durchführte. Wer kannte damals die

163] Grofser (rechts) und Kleiner (links) Wehlturm.
Aufnahme von W. Krehl.

Rudolph Fehrmann's article describes his friendship and climbs with Oliver Perry-Smith.

American Chess Magazine, 1898

Chess by a Philadelphian.

(From the Ledger, May 19, 1898.)

BY EMIL KEMENY.

Oliver Perry Smith, whose nomination to be Commissary of Subsistence, with the rank of a captain, was announced yesterday, is a chess player of considerable ability. He participated in the Franklin Championship Tourney, as well as in the Mercantile Library Cup contest.

In the continuous tourney he won the prize for the greatest number of victories (there was no prize for the greatest number of losses, otherwise he would have captured that also). During his visit to Washington he played numerous games, winning nearly all of them. The following game was contested between Mr. Perry-Smith and the Turkish Minister. The former won in rather short order, but it must be admitted that the defence might have been improved upon.

White. Mr. Smith.	Black. All Ferrough Bey.
1 P—K 4	1 P—Q Kt 3
2 B—B 4	2 B—Kt 2
3 Kt—K B 3	3 BxP
4 Kt—Kt 5	4 BxP
5 P—K R 4	5 P—KR 3
6 P—R 5	6 BxB P

Now, should White answer QxB, then PxKt would follow, and White is not only two pawns behind, but also has a weak QP and KRP; nevertheless, most authorities will agree that Black's sixth move was not quite satisfactory, principally on account of the very forcible reply that White had on hand.

White plays B—B 7, winning brilliantly.

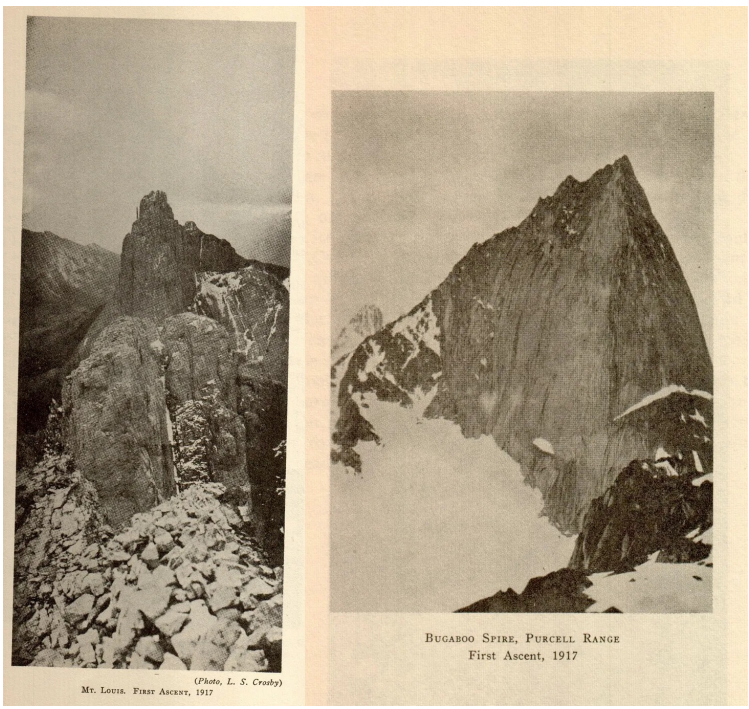
Chess match of Oliver Perry Smith sr.

Segue to Volume 2

Interest in steep rock walls that required improved rock anchoring technology to developed slowly in the Americas. The major clubs were largely focused on the biggest peaks, and technical rock climbs were still only considered an exercise. Indeed, some of the best overall guides to North American climbing in this era were published in the German-Austrian Alpine Journals by travelers and mountaineers who were more familiar with the limits of the possible on steep rock. DuÖAV articles in 1900 by Jean Habel ("In the North American Alps"), and a 1910 article by Robert Liefmann ("In the Mountains of the United States of America") provided fine fodder for German language speakers, including details on transportation and lodging around the country. Liefmann spent eight months on a "study-tour" comprehensively describing the United States and Canadian climbing developments, noting which major peaks had been climbed, and those still unclimbed.

And indeed, many of the first technical climbers to come to North America were German-language immigrants from Switzerland, Austria, Italy, and Germany, sometimes escaping war, rising fascism, and economic depression. Trains provided new access to mountain climbers in North America. And, as in the case of the Canadian Pacific Railway promoting alpine resorts along the railroad, firms hired European guides as early as 1897 to offer guiding services in the North American mountains (as well as invited guest speakers such as Whymper). The guides were often known locally as "Swiss Guides", even though they were not always from Switzerland. It was primarily those who had climbed technical routes in the Eastern Alps who brought new techniques to America, in the period starting in 1916 and into the 1930s, many of the next steps in technical rock climbs in North America were evolved by native German readers (as most of the literature on the new tools and techniques was either in German or Italian), including Conrad Kain, Joe and Paul Stettner, Fritz Wiessner among others. But this is not to say there were no intrepid Americans and Canadians who also traveled to Europe, learned of the new tools and techniques, established new standards on the North American rock, and eventually pushed the sport even further than what had been achieved in Europe; their stories will be covered next.

This volume covers the developments in tools and techniques Europe, and the global context of the many global big wall climbing breakthroughs and innovations of the 20th century.

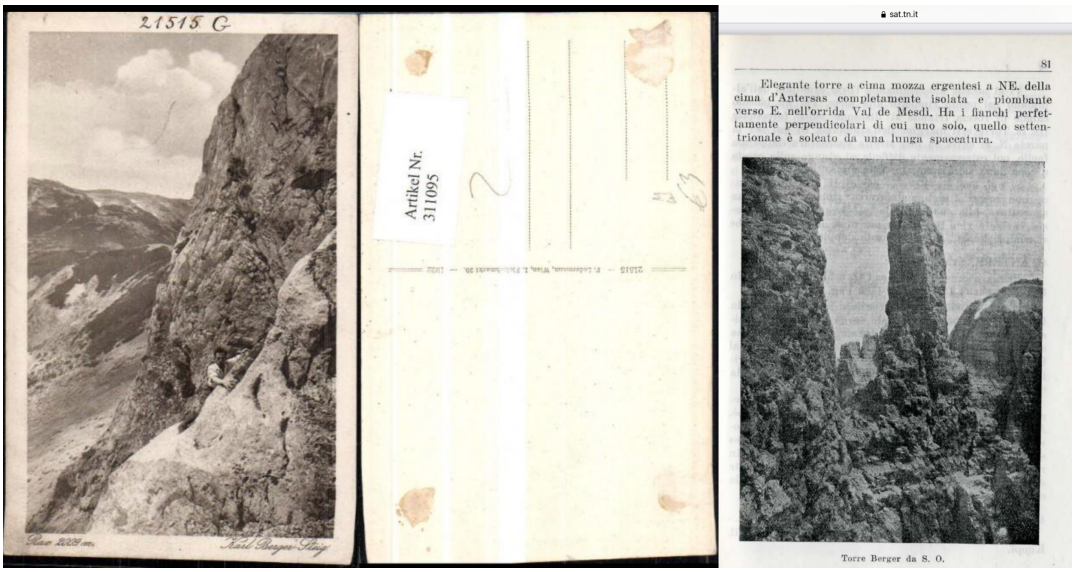


(*Photo, L. S. Crosby*)
Mt. Louis. First Ascent, 1917

Bugaboo Spire, Purcell Range
First Ascent, 1917

Appendixes

Authors Note: When climbing with Xaver Bongard, we often joked and exaggerated nationalistic themes in climbing. Xaver hated with a passion if anyone ever deemed a climb of his, the first "Swiss ascent"; we named a climb in Zion the "Swiss-American" as a way to poke fun of nationalism in the climbing world. Xaver had a different way of thinking; he told me avoided the mandatory Swiss conscription into the Army by pretending to be crazy, and during long periods of being locked up and psycho-analysed in lieu of military training, he sometimes felt he was actually going crazy (perhaps he really was crazy in the same sense the king and queen in Paulo Coelho's story, the Well of Madness, were considered crazy— but he refused to drink from the well). His alternate reality was made crystal clear to me as he methodically sang his way up a thin nailing and hooking A5 pitch off the snow ledge halfway up Great Trango Tower in 1992, where the risk of smashing onto a ledge was real, inversely proportional to the chances of survival subsequent to a debilitating fall. Xaver had one of the gentlest souls of anyone I have ever known, his major trait was his positive and inclusive view of the world, and he taught me a lot about inclusive thinking too. Prior, I climbed my first big El Cap nailing route (Zodiac) swinging leads with Lydia Bradey in 1981, and though I was definitely aware of international rivalries, I do not recall ever thinking of big wall climbing as the primary domain of men; in fact, quite often the opposite having known during my active climbing years Bev Johnson, Sibylle Hechtel, Mari Gingery, Lidija Painkiher, Sue Bonovich, Sue Harrington, Ellie Hawkins, Lisa Gnade, Beth Wald, Kitty Kalhoun, Steph Davis, and Lynn Hill. But it becomes clear it has been portrayed as such at times throughout history. Nationalism and sexism have similar roots, and it's apparent that both have existed in the reporting of climbing, sometimes simultaneously, over the decades when examined with a modern lens.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Elegante torre a cima mozza ergentesi a NE. della cima d'Antersas completamente isolata e piombante verso E. nell'orrida Val de Mesdì. Ha i fianchi perfettamente perpendicolari di cui uno solo, quello settentrionale è solcato da una lunga spaccatura.
Torre Berger da S. O.

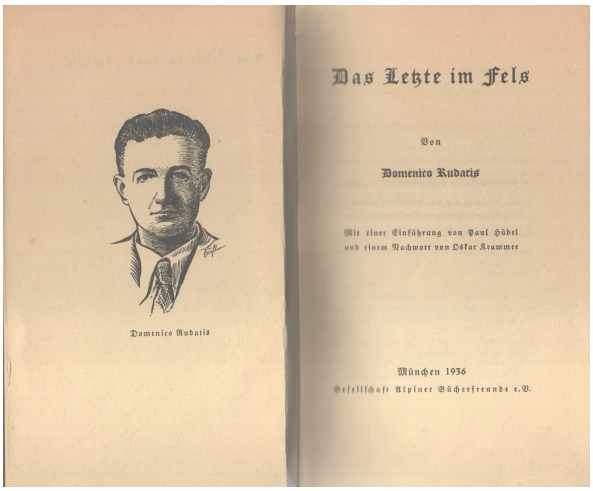
Left: Karl Berger on a steep route—possibly in the Rax Alps? Right: Torre Berger in the Dolomites (Sella Group), first climbed in 1900. Karl Berger from Innsbruck was one of the leading spire specialists in the first decade of the 20th century (he did not name it Torre Berger).

Appendix 1
A look at histories written in the 1930s.

The Sport of Climbing, by Domenico Rudatis. A nine-article series on the early history of the Dolomites published in Lo Sport Fascista, 1930-1.

An early climbing history called "The Sport of Climbing" was published in Lo Sport Fascista, *"an episodic collaboration, from Winkler's first exploits to the latest Italian exploits"* (Luigi Piccioni, 2014). In the 'nine dense episodes' published between 1930 and 1931, the 99-page series details the progression of climbing difficulty. The author Domenico Rudatis (b. 1898 Venice, d. 1994 New York City) was an accomplished climber and also a frequent contributor to the early issues of Lo Scarpone, a bi-monthly newspaper published by the Italian Alpine Club covering the latest news of alpinism and skiing.

Rudatis was obsessed with climbs of "the sixth grade" which as the time was the top of the grading scale originally devised by Willo Welzenbach, but evolving[40], as all grade systems do, to define the long (600m+) technical mixed free and aid rock routes that were booming at the time, such as the impressive and visionary Solleder-Lettenbauer route on Civetta, declared by Rudatis in his text as the definitive first "Grade VI." Rudatis's definition of the sixth grade is quite specific—four criteria are specified, tailored to the exact potential of new routes that were becoming accessible with new tools and techniques developed prior to WWI.



Another text by Rudatis focused on "Grade VI" climbs

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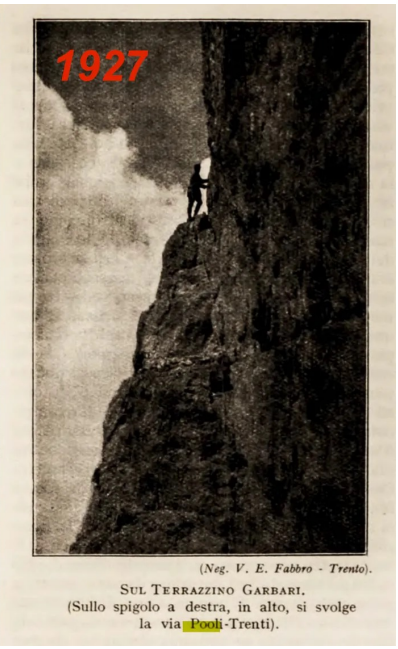
[40] it would be interesting to examine various grading definitions over the years. In my time, the Welzenbach Grade I to Grade VI system had evolved to represent the time required for big walls, with Grade IV being a long all-day route like the East Buttress of El Capitan, Grade V requiring a single bivy, and all the multi-day big walls in Yosemite noted as Grade VI's (which ranged from easy routes like the Nose to the hardest nailups like the Sea of Dreams). Big wall Grade VII's appear in the literature starting in the 1990s, with myself a reluctant verifier of the grade, clarifying that Grade VII climbs, if they had to be defined, dated back to the 1970s: see this note on bigwalls.net, written in the 1990s.

The Rudatis history provides historical information about the progression of difficult climbs in the early era of big wall climbing. Much of the lore of Angelo Dibona, Hans Dülfer, Paul Preuss, and others originate from Rudatis's history. A case has been made on Rudatis' lack of inclusion of the women pioneers; in the text, climbing is depicted as a patriotic struggle and an "intrinsic renewal of men, of mentality, atmosphere, will, soul" with "naked virtues of athletic value, audacity and will" who make conquests of virgin peaks in dangerous mountain environments[41].

1910
Torrione supremo del Campanile Basso
Pareti Ovest e Sud.
Disegno del socio A. Calegari [9].
— — — — Itinerario comune.
. . . . . Variante Povoli-Trenti.



HISTORY "DNA"—
--the missing "v"

One of the key "DNA" markers of reference to the Rudatis histories is his spelling of the guide/carrier Nino Povoli/Pooli (1862-1935). In the original source journals, the first attempt of Campanile Basso team was Carlo Garbari with Antonio Tavernaro and Nino Povoli. Prior to the first ascent, Povoli famously tried to climb direct up the final face (according to Piaz, at gunpoint by Garbari), and later returned to climb the face with Riccardo Trenti (see Basso chapter). In the German Alpine Journals, (1898, 1906, 1908), Nino is only referred to as Povoli (the Pooli spelling does not appear). Likewise in the Italian Alpine Journals, only the Povoli spelling occurs in the pre-WWI period.

CAI Rivista: History books that use the Pooli spelling are likely using Rudatis' outline of early history as their source. It is now possible to gain a broader view of the earliest years of technical climbing by delving deeper into the original source journals.

In a 1927 article on Campanile Basso by Vittorio Fabbro in the Italian journals, we see for the first time the spelling of Nino's name without the "v", as Pooli. Rudatis picks this up in a 1929 article, then sets the name in stone, so to speak, in the 1930-31 Fascist Sport articles and thereafter the Pooli spelling takes over. In dozens of "History of Mountaineering" books, even very recent ones, the Fabbro/Rudatis spelling for Povoli

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[41] Rudatis uses the terms "conquer" and "conquest" over 100 times in the article. The origin of the terms conquer and conquest in mountaineering are interesting, having been used prior to document the explorations and colonisations of new lands. Whymper uses 'conquer' a few times in Scrambles Amongst the Alps In the years 1860-69. It is used to document the climbs of the highest peaks such as Denali (then Mount McKinley) and the initial exploration of the North and South Poles, but the terms really kick up in the climbing literature in the 1930s, then in titles like High Conquest: The Story of Mountaineering, by James Ramsey Ullman, 8 vo., 334 pp., illustrations and maps. Philadelphia: J. B. Lippincott Company, 1941. Dozens if not hundreds of books on Everest have been written with conquest and conquer in their titles, and the recent National Geographic Society's subtitle for their 2020 book of Mountaineers is "Mountaineers: Great tales of bravery and conquest (Hardback)".

as Pooli persists. Perhaps the earlier journals were incorrect, though in some 1920s-1930s journals both names persist; regardless, the Pooli spelling indicates followings of Rudatis' history, with his focus on the numerical progression in the pre-WWI years (and lack of coverage on women pioneers)—so perhaps it is time to have another look at the pre-WWI years with access to primary searchable journals and the availability of old and forgotten books.

Rudatis's concepts of climbing

Rudatis' concept of "**di natura omogenea**" applies to both the climb and the climbers in the first two criteria. 'Omegenea' translates to a "uniform whole, harmonious in its constituent elements", and is reminiscent of the ideology of Cesare Evola, an Italian philosopher and mountaineer popular with young Italian fascists at the time. Rudatis is most proud of Italian climbs and climbers, but is equitable in respect to the accomplishments of hardmen of other nationalities. In defining the sixth grade, Rudatis provides examples of climbs and climber "schools" in the Kaisergegbirge (München/Munich school), Gesäse (Vien/Vienna school), and "especially our Dolomites!"

Tools are precisely specified: "The means of mutual insurance, which are all and alone artificial means allowed in climbing are exclusively: ropes, nails, carabiners and hammer." Rudatis further distinguishes from techniques used in the Western Alps (where pitons were used more sparingly): "The superb Dolomite walls are not in fact they have never seen the use of fixed ropes, poles, ladders of rope and various instruments like the other regions of the Alps." For the proper use of pitons, the acrobatic free and aid climbing standards established by Dülfer before WWI provides the concept of fair use; Rudatis reminds: "that driving nails in certain circumstances is a hard work and fully worth as much as the overcoming of rock difficulty without artificial aids."[42].

After establishing the rules and definitions of a "pure and natural" climb in his first few chapters, Rudatis summarises: "The principle remains definitively fixed: ropes, nails, carabiners and hammer are the only artificial means allowed in climbing, and their use is conditional on an assessment of the difficulties based on the purity of the style." And with his definition of 'purity', Rudatis then systematically analyses the numerical progression of graded climbs in the Eastern Alps.

For each "era", baseline routes from each decade are described, then used comparatively, beginning with Winkler's solo on the Vajolet Towers in 1887 ("the sport of climbing was born with Winkler"), followed by Piaz's 5.8 lieback on Punta Emma in 1900, and Dibona's 1911 route on the north wall of Laiderer, and so on, with subsequent routes in each era compared in terms of difficulty and deemed significant, or not. Though tales of these climbs had been reported in journals, the Rudatis series is one of the first to put them in big-picture context, and many histories even to the modern day have followed the same historical progression outlined in the Rudatis series as their timeline of early climbing accomplishments in the Eastern Alps, as

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[42] Rudatis also appears to advocate rock modification, probably because it was often a fine line between removing loose rock and sculpting holds on many first ascents: "The same criterion should be extended to the eventual use of the hammer for to give some grip or some support, I use that in practice; however, it only happens exceptionally. Thus we also have the principle: Handles or supports engraved or otherwise modified with a hammer must be considered as natural, in the judgment of the difficulty. This, of course, even if this hammer work requires considerable effort. This principle had never been posed until now, but it is just as logical and necessary as the other established by Dülfer regarding nails."

well as clarifying the new mechanical climbing techniques and their inventors[43]

Overview of Rudatis's history
In his review of pre-1900 pioneers, Rudatis lists: "Among the pioneers we cannot fail to mention: v. Barth, Weilenmann, Payer, Grohmann, Ball, Tuckett, Tyndall, Whymper, Freshfield, Sella, Giordano and others, soon followed by a large group of brave as, to name a few more, Mummery, Schulz, Merzbacher, Purtscheller, Vaccarone, Coolidge, de Falkner." The great guides are heralded: Christian Almer of Grindelwald 1826-1898, Melchior Anderegg of Meiringen 1827-1914 (first swiss guide), Jean-Antoine Carrel of Valtournenche 1829-1890, Pierre Gaspard of St. Christophe 1834-1915, Alexander Burgener of Saas 1844-1910 Johann Grill from Ramsau 1835-1917, Santo Siorpaes of Cortina d'Ampezzo 1832-1900, Michel Innerkofler of Sesto 1846-1900, Daniel Innthaler of Nasswald 1847-1923, Guido Lammer, Émile Rey of Courmayeur, Jean-Joseph Maquignaz of Valtournenche, Johann Stabeler from the Zillertal, François Devouassoud, Alois Pinggera and Peter Dangl (princes), Michele Bettega, Bortolo Zagonel, Giuseppe Zecchini and Antonio Tavernaro of the Pale di S. Martino, Luigi Bernard of Siusi, Agostino Verzi of Cortina d'Ampezzo, Luigi Rizzi from Val di Fassa, and Antonio Dimai, the "king of the Dolomites."

Many pre-WWI heroes of the Dolomites are included: Swiss Johann Jakob Weilenmann, Bavarian Hermann von Barth, French Étienne Giraud, Ludwig Purtscheller, Hermann Delago, Georg Leuchs, Robert Hans Schmitt, Karl Berger and Otto Ampferer, Johann Saunter, Ludwig Norman-Neruda, Alfred von Radio-Radiis, Eduard Pichl, Hans Barth, Hanns Pfannl, Hans Helversen, Franz Nieberl ('Pope of the Kaisergegirge'), Tita Piaz, Georg Sixt, Sepp and Veit Innerkofler, Max and Guido Mayer, Luigi Scotoni, Gabriel Haupt and Karl Lömpel, Otto Herzog, Hans Fiechtl, Alfred Deye, Willi von Redwitz, Rudolf Fehrmann, and even our American hero, Oliver Perry-Smith, for his free-climbing testpiece on Campanile Basso in 1908.

Rudatis states, "We do not intend to make the history of climbing here, not even in close summary; instead we will mention, much more briefly and usefully, only the milestones of progression." Climbing milestones are very much presented as the domain of men, and very few women climbers are mentioned. A Miss Grete and Miss Fitzgerald appear in the context of accompanying others on an ascent, and three leading women of the era are referenced in the context of being led by guides: Jeanne Immink, Rolanda and Ilona Eötvös, who all had very strong and expansive climbing records, quoted below: *"The following year, 1891, the guide Antonio Dimai, leading the famous Dutch climber Jeanne Immink, made the second ascent to Punta delle Cinque Dita by the Schmitt chimney."*

"Two routes excel in 1905, rising to this superior level. One is the ascent of the south face of Teston del Pomagagnon by the guides Antonio Dimai and Agostino Verzi of

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[43] including my own in the original Mechanical Advantage article (1999) as well as Doug Scott's Big Wall Climbing. At the time I wrote Mechanical Advantage for Ascent with Al Steck and Steve Roper as rigorous editors, I made use of the most comprehensive climbing libraries in the USA at the time, along with rudimentary translations of primary foreign language journals. I uncovered a few bits of new info, even though Roper commented overall, "You've done a yeoman job, but you bit off a big one." (his view improved slightly later, see note from Roper with bibliography of sources used in the original article at bottom of this page). Now, with access to digital versions of the original journals online, combined with the ability to procure obscure texts that only otherwise exist in a few libraries, a broader view of history can be examined.

Cortina d'Ampezzo leading the famous climbers Rolanda and Ilona von Eötvös."

Beatrice Tomasson and the Tomasson-Bettega-Zagonel route on the South Wall of Marmolada are also described, but mainly to make the case that the route was not a milestone on the path to the sixth grade. Today it becomes clear that original route on the south wall of Marmolada in 1901 was the first "It goes, boys" (*Lynn Hill*) climbing moment of the century, and the ascent was well-recognized in its time as a significant breakthrough in long vertical rock routes, referenced frequently in books and articles before WWI as a classic testpiece. Guido Rey devoted a whole chapter to the climb in his 1913 "Alpinismo Acrobatico." In the history of big walls; imagining and climbing the south wall of Marmolada—the longest and one of the most difficult of the time—set the new standard for the century, so it is hard to imagine how it ever lost its spot in the climber's "Guinness Book" of historical superlatives, which seems to have happened after the 1930s, until the article by Hermann Reisach in the Alpine Journal in 2001 (Beatrice Tomasson).[44]

Despite the lack of coverage of women pioneers, what is true is that the material Rudatis covered became a major reference in the following decades, as it does document well many of the key developments in the Eastern Alps 1900-1930 period, where big wall climbing tools and techniques developed. So let's look at how the progression was presented in the 1930s (and perhaps consider other important and comparable routes that could be added).

original Rudatis articles linked here.

OUTLINE OF RUDATIS1930s VERSION OF HISTORY (rough draft):

Route Timeline per Rudatis

- 1884 Croda da Lago: Guide Michele Innerkofler and Roland Von Eötvös
- 1886 Cima della Madonna: Georg Winkler and Alois Zott
- 1887 Vajolet: Georg Winkler
- 1890 Cima Piccola: Hans Helversen
- 1891 Punta dell Cinque Dita (2nd): Antonio Dimai and Jeanne Immink
- 1892 Rosetta in Pale di S. Martino: Antonio Tavernaro, Bortolo Zagonel, Antonio Crescini.
- 1893 Cimon della Pala ('Matterhorn of Dolomites'): Antonio Dimai with Leon Treptow.
- 1895 Vajolet: Hermann Delago
- 1896 North wall of Hochtor in Gesäuse: Heinrich Pfannl and Thomas Maischberger
- 1897 West wall of Laurino: Luigi and Simone Rizzi with Emil Munk
- 1898 Marmolada west ridge (later 'armed with metal ladders'): Luigi Rizi w/ Hans Seyffert and Eugen Dittmann
- 1899 Basso di Brenta: Karl Berger and Otto Ampferer
- 1899(): traverse of three southern Vajolet towers: Eduard Pichl and Hans Barth
- 1899(): NW della Civetta: Dimai with Swinnerton Phillimor and Arthur Guy Anders Raynor.
- 1899/1900 NE Punta Emma: Tita Piaz
- (Vajolet: Stabeler)
- 1901 Totenkirchl Pfann chimney
- 1901 North wall of Admonter Reichenstein Heinrich Pfannl and Thomas Maischberger.
- 1901-1904 Kaisergebirge: Hans Pfann, Franz Neiberl, Georg Leuchs

[44] It is also curious that Rudatis does not mention Mary Varale, who was a contemporary at the time with an extensive record of ascents. Mary was married to the sports journalist Vittorio Varale, who helped edit the articles; her climbs seem to be on par with many others that are referenced by Rudatis.

- 1902 Campanile di Val Montanaia: Viktor Wolf von Glanvell and Günther von Saar
- 1903 Torre de Pissadù in Sella group: Leo Heiss from Monaco, ‘emient solo climber’
- 1904 Basso ‘Pooli’
- 1905 Teston del Pomagagnon South Wall: Anonio Dimai Agostino Verzi with Roland and Ilona von Eötvös. —> Campanile Dimai
- 1905 SW wall of Cimone, Georg Leuchs ‘Altarpiece’
- 1906 Campanile Toro: Piaz and Bernard Trier
- 1907 Torre Leo in the Cadini di Misurina: Angelo Dibona and Johann von Pauer
- 1907 East wall Cima Piccola di Lavaredo: Otto Langl, F Horn
- 1908 Roda di Vael west wall: Dibona and Verzi with Alfred Broon and Hanson Kelly Corning
- 1908 Basso SW: Rudolf Fehrmann and Oliver Perry-Smith (variant by Luigi Scotini)
- 1908 Totenkirchl West Wall: Tita Piaz, Josef Klammer, Rudolf Schietzold, Franz Schoffenegger.
- 1909 Cima Piccola di Lavaredo N face western chimney: Fehrman and Oliver Perry-Smith
- 1910 Feldkopf Zsigmondyspitze NE face; Hans Fiechtl Hans Hotter. most difficult granite climb of its time.
- 1910 Piccola Civetta: Gabriel Haupt and Karl Lömpel
- 1911 Punta della Cinque Dita “Diagonal Crack”: Haupt and Kurt Kiene
- 1911 Basso Preuss
- 1911 Lalider North wall: Dibona, Mayer, Luigi Rizzi
- 1912 Lalider: Otto Herzog and Georg Sixt

East wall Fleischbank (400m): Hans Dülfer and Werner Schaarschmid (attempted previously by Fiechtl, Sixt, Herzog, Adolf Deye), then repeated 7 times in 1912 by Sixt, Deye, Pfann, and others.

- Schüsselkarspitze south wall, in the Wetterstein: Herzog and Fiechtl
- 1913 Direct west wall Totenkirchl: Dülfer and Villi von Redwitz
- Cima Grande west wall: Dülfer and Walter von Bernuth
- Cima di Mezzo of Predigtstuhl
-

Jumps to 1919-1920

- 1919 EAST FACE Predigtstuhl (900m) EAST FACE Predigtstuhl (climbed 16 times in next two years)
- 1921 West face of North summit Predigtstuhl: Paul Diem Karl Schüle
- 1921 HaHe-Verschneidung on Dreizinkenspitze (Karwendel): Gustav Haber and Herzog
- 1921 Cima Ovest of the Praxmarerkarspitze
- (controversy with repeat ascent with pitons lost and rescue)
- 1923 direct Predigstuhl: Franz Weinberger and Fiechtl
- 1923 Hochwanner in Wetterstein (700m): Ludwig Bauer, Georg Gruber
- 1923; Mandelkogen north edge (1913: Preuss RIP): Karl Schreiner, E. Hein from Graz
- 1924: Pelmo north wall: Roland Rossi and Felix Simon
- 1925: SE Wall Fleischbank: Roland Rossi and Fritz Wiessner (extensive use of nails)
- Aug.1925 La Furchetta—tried by Dibona-Mayer-Rizzi and Dülfer-Trenker (to Pulpit Dülfer), then death of J. Verrà, then another attempt. Then Solleder and Wiessner
- Aug.7,1925 Civetta Nw wall: Solleder and Gustav Lettenbauer (15 hours)
-

(TK: also prior—Dibona also on Croz d’Altissimo upper part of the corner. rope traverse. Piaz represented but mostly for his free climbing skill vs. his technical breakthroughs).

Appendix 2. Sammlung Joachim Schindler, Dresden

Evidence of carabiners in the Elbsandsteingebirge from Joachim Schindler (Dresden sandstone noted as the "low mountains").

Joachim writes:

On some aspects - such as the date for the introduction of carabiners - there are very different versions of the information. For all technical equipment such as rings, hooks, carabiners, climbing ropes, rope slings, etc., there are various statements and claims. There is a date when these tools were generally known, but there were already individual users and experiments.

Perhaps another important statement: For a long time, Alpine historians paid little attention to what was happening in the low mountain ranges or viewed them with low value with regard to climbing technology. For example, the first climbing guide for Saxon Switzerland was published in 1908 - in other climbing areas many years later. With the climbing guide by Dr. Rudolf Fehrmann, ALL routes were classified in difficulty levels I to VII as early as 1923. Three years later, Welzenbach suggested a difficulty scale from I to VI!!!

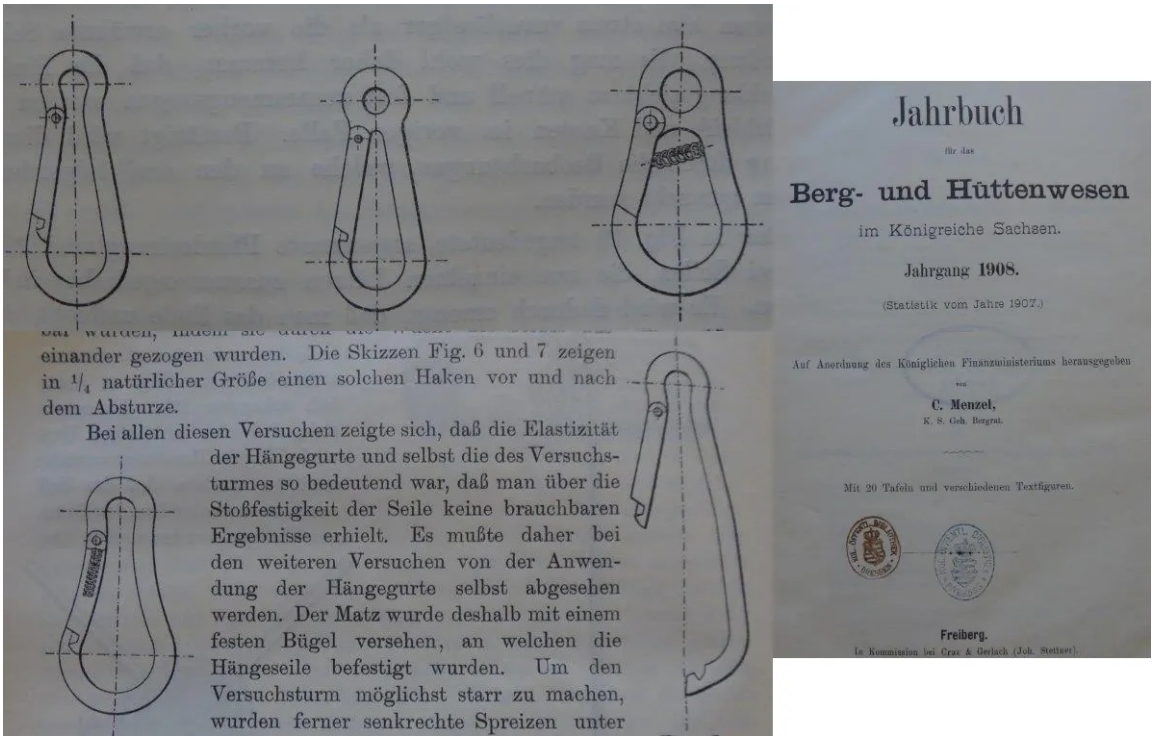
- Around 1910 "Rambo" Herzog is said to have introduced the snap hook. My photos show climbers with rope slings and carabiners in Saxon Switzerland as early as 1892/93!!! I have more examples, but I'm still working on them myself.

Best regards from Dresden

Achim

Images are from the Joachim Schindler collection provided to verify carabiners in the Elbsandsteingebirge as early as 1892:

Left: Turner with rope sling and carabiner. 1892. Center: Otto Lugenheim ties himself to the ring on the Schrammtorwächter, 1908/ Right: Rudolf Kaden at the ring on Schrammtorwächter, 1934. Dresden climbers equipped with a single carabiner for attaching oneself to an anchor temporarily to belay or thread the rope for free climbing.



einander gezogen wurden. Die Skizzen Fig. 6 und 7 zeigen in $^1/_4$ natürlicher Größe einen solchen Haken vor und nach dem Absturze.

Bei allen diesen Versuchen zeigte sich, daß die Elastizität der Hängegurte und selbst die des Versuchsturmes so bedeutend war, daß man über die Stoßfestigkeit der Seile keine brauchbaren Ergebnisse erhielt. Es mußte daher bei den weiteren Versuchen von der Anwendung der Hängegurte selbst abgesehen werden. Der Matz wurde deshalb mit einem festen Bügel versehen, an welchen die Hängeseile befestigt wurden. Um den Versuchsturm möglichst starr zu machen, wurden ferner senkrechte Spreizen unter

Jahrbuch

für das

Berg- und Hüttenwesen

im Königreiche Sachsen.

Jahrgang **1908.**

(Statistik vom Jahre 1907.)

Auf Anordnung des Königlichen Finanzministeriums herausgegeben

von

C. Menzel,

K. S. Geh. Bergrat.

Mit 20 Tafeln und verschiedenen Textfiguren.

Freiberg.

In Kommission bei Craz & Gerlach (Joh. Stettner).

Above: Carabiners designed for the mining industry as depicted in the 1908 Mining Technology yearbook, probably some of the first strong snap-links adapted for climbing.

1914 carabiners used in the Sächsischen Schweiz.

Appendix 3: German-Italian Climbing Dictionary (CAI)

TERMINOLOGIA TECNICA

DELLA LETTERATURA ALPINA IN LINGUA TEDESCA

Crediamo far cosa gradita ai lettori della Rivista mensile raccogliendo, in ordine alfabetico e con la versione in italiano, alcune delle espressioni tecniche, che ricorrono più frequentemente nella letteratura alpina in lingua tedesca.

Con ciò non pretendiamo di fare un'opera nuova o completa: l'unico fine che ci ha mossi fu di facilitare la lettura e la comprensione delle diffusissime riviste alpine, delle guide ed itinerari di salite, in lingua tedesca, particolarmente ricche di dati interessanti sulle salite dell'Alto Adige e delle Dolomiti ed utili a chi voglia intraprendere escursioni in queste regioni.

Saremo grati a quei soci che vorranno aiutarci a dare forma più completa al nostro modesto lavoro, riportando a fianco dei termini tedeschi, quelli francesi ed inglesi (1).

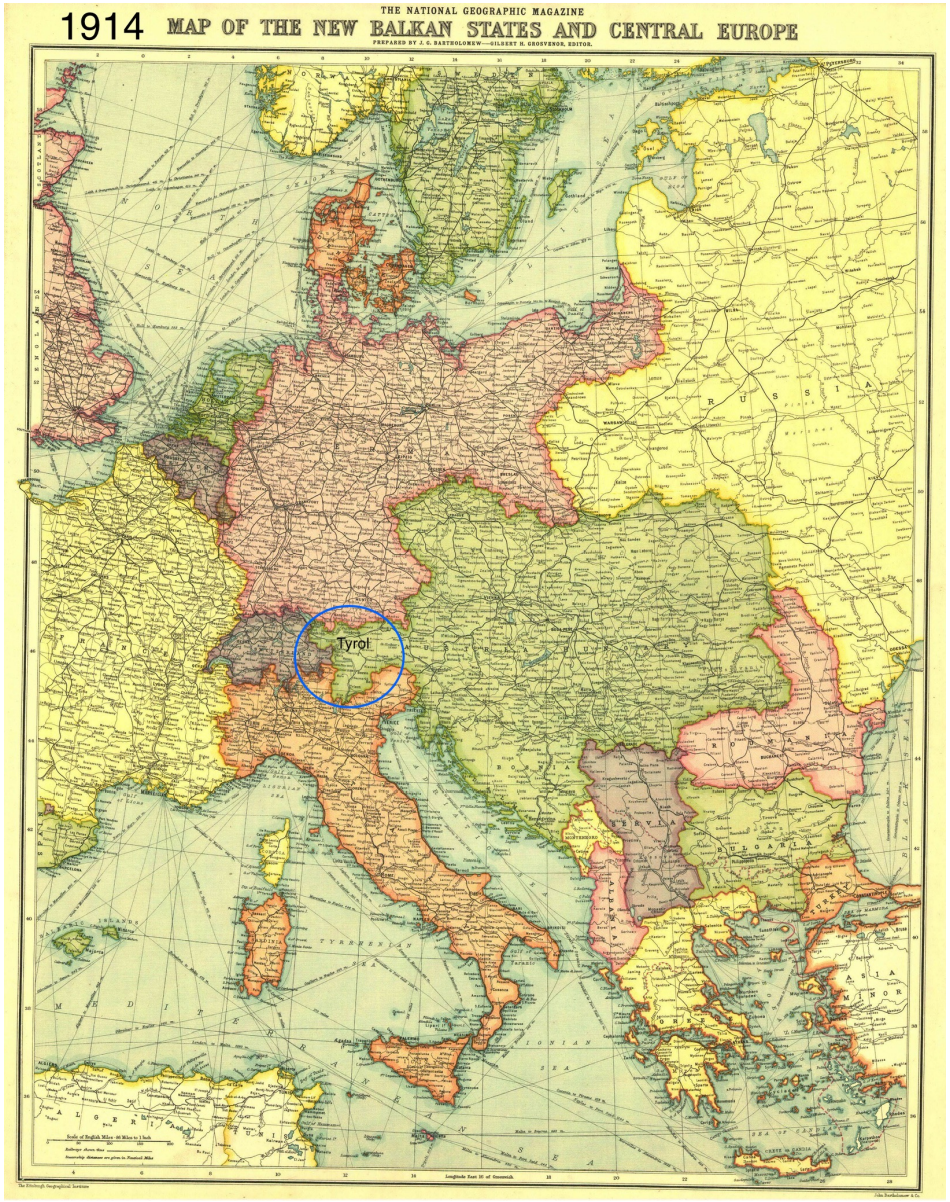
Abbruch – dirupo.
Abfahren – scendere scivolando (sulla neve o ghiaia).
Abfahrt – scivolata (in discesa).
Abgrund – precipizio.
Abhang – pendìo.
Abrisslinie (*einer Lawine*) – linea di distacco (d'una valanga).
Absatz – risalto di roccia, pianerottolo, gradino.
Abschneider – accorciatoia.
Abschüssig – dicesi di cengia inclinata a valle e cadente verso l'esterno.
Abseilblock – masso (spuntone) d'ammarraggio per la corda doppia.
Absturz – pendìo, versante a pareti rocciose, dirupo.
Achsel – spalla.
Alpe, Alm – usato spesso in unione a nomi locali nel senso di capanna alpina, casera (*Alpenhütte – Almhütte*); solo, invece, significa una distesa di prati adibiti a pascolo. Raramente si adopera per indicare tutta l'estensione d'una montagna: p. e. *Arzalpe – Staffelalp*.
Aper – dicesi specialmente di ghiacciaio scoperto, ossia libero di neve.
Ausläufer – contrafforte.
Ausrùstüng – equipaggiamento.
Ausweg – via d'uscita.
Band – cengia; si distinguono a seconda della loro conformazione:
Eisbänder – cenge ricavate nel ghiaccio.
Felsbänder – cenge di roccia viva.
Grasbänder – cenge erbose.
Schneebänder – cenge ricoperte di neve.
Schuttbänder – cenge detritiche.
Bergaussen – a valle.
Bergschrund – crepaccia terminale del ghiacciaio.
Bergstock – bastone da montagna; anche nel significato di massiccio d'una montagna.
Bratschenwände – pareti rocciose costituite da massi mobili, friabili.
Couloir – doccione, colatoio.
Ecke – spigolo.
Eckpfeiler – sperone d'angolo.
Einriss – solco profondo.
Einstieg – attacco (punto ove incomincia la salita).
Eisfall-Eiskatarakt – seracchi.
Eispickel – piccozza.
Eistürme – seracchi.
Falllinie – linee di massimo pendìo.
Fäustling – guanto a sacco, manopola.
Feldflasche – boraccia.
Felsabsatz – bastione di roccia.
Felsabsturz – dirupo.
Felsblock (*eingeklemmter*) – masso (incastrato fra due pareti).
Felsgürtel – fascia di roccia (che corre fra due cenge).
Felsriegel – salto di rocce (che sbarra il corso di una valle).
Felsriesen – baluardo, colosso roccioso.
Felsriff – macigno.
Felsrippe – costolone roccioso.
Felsschuppe – crosta di roccia (a guisa di squama).
Felsvorsprung – sperone roccioso.
Felswandgürtel – salto di roccia che si estende orizzontalmente per lungo tratto.
Felszacken – spuntone.
Ferner – ghiacciaio (termine usato nell'Alto Adige e nel Tirolo).
Firn – neve vecchia, granulosa (che sotto la pressione degli strati superiori più recenti s'è costipata e trasformata in ghiaccio) (*Gletschereis*).
Firnbecken – vedretta, conca ove si raccoglie la neve (che poi si trasforma in ghiaccio).
Firnbruch – seracchi.
Freilager – bivacco.

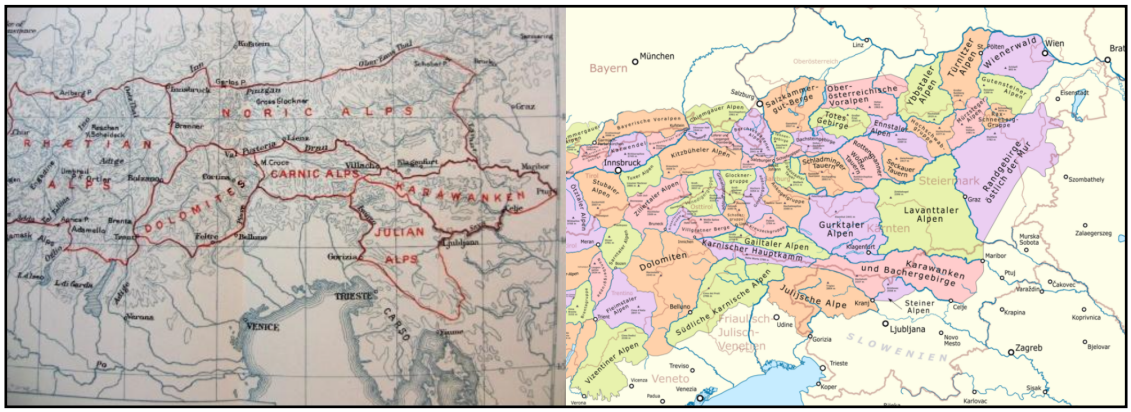
(1) Per la versione francese ed inglese di alcuni termini vedi il vol. I della guida *Mont Blanc Führer* di W. Martin, P. Reuschel; R. Weitzenböck, Vienna, 1913, a cura dell'*Oesterreichischer Alpenclub*.

Gandecken – conformazioni moreniche, morene centrali (termine svizzero).
Gefällsbruch – salto del pendìo.
Geländersicherung – metodo di assicurare il compagno nell'attraversamento di cenge o creste esposte (consiste nel tendere fortemente la corda al disopra della cengia o cresta di modo che, chi inizia la traversata se ne possa servire a guisa di ringhiera).
Gendarm – gendarme.
Gerõll – sfasciume, detriti.
Gerõllfeld – zona, campo di sfasciume.
Geschiebe – terreno d'apporto.
Geschroff – rocce rotte.
Gesimse – esile cengia rocciosa.
Glaseis – vetrato.
Glatteis – vetrato.
Gletscherbrillen – occhiali da neve.
Gletscherschliffe – solchi e striature prodotti sulle rocce dal ghiacciaio che le ricopriva in epoca anteriore.
Gletschersturz-Gletscherbruch – seracchi.
Gletschertisch – masso sostenuto da una colonna di ghiaccio.
Gletschertor – porta del ghiacciaio.
Gletscherzunge – lingua inferiore del ghiacciaio (costituita di ghiaccio vivo).
Graben – vallone, comba.
Grashang – pendìo ricoperto da zolle erbose.
Grat – cresta (cadente ripidamente d'ambo i lati).
Gratabbruch – intaglio nella cresta.
Grataufschwung – salto d'una cresta.
Gratschneide – filo di cresta.
Gratturn – gendarme.
Gratzacken – denti d'una cresta.
Graupeln – neve granulosa.
Griessgerõll – detriti ghiaiosi.
Griff – appiglio (per le mani).
Gufel – infossatura cavernosa (scavata dall'acqua).
Gufferlinie – morene (termine svizzero).
Gurtenschlaufe – bracciale (per piccozza).
Gux-guxen – tormenta di neve (anche *Schneegestober*).
Gwächte-Wächte – cornice.
Halde, – fianco, pendìo del monte.
Gerõllhalden – pendii di sfasciume.
Schutthalden – pendii detritici.
Steinhalden – pendii sassosi.
Handschlaufe – cinghietta per passarvi la mano.
Hang – pendìo (*Abhang*).
Hängegletscher – ghiacciaio pensile.
Harscht – crosta liscia di neve gelata.
Bruchharscht – crosta liscia gelata, ma fragile.
Haue – becco della piccozza.
Hohle – caverna.
Kamm – stretta dorsale (d'un monte).
Kante – spigolo.
Kanzel – pulpito, terrazzino.
Kar – conca (chiusa fra ripide pareti). Vedi: *Mulde*.
Karabiner – moschettone.
Karrenfelder – campi scanalati (banchi rocciosi profondamente solcati per opera delle acque).
Kees – ghiacciaio (termine usato negli Alti Tauri).
Kegel – cono di deiezione.
Kessel – anfiteatro, conca.
Klamm – stretta gola (profondamente incassata fra rocce).
Klemmblock – masso incastrato in un camino e che ne ostruisce il passaggio.
Kletterschuh – scarpa da gatto, pedula, scarpetta.
Kluft – crepa, crepaccio (nei ghiacciai), burrone.
Kriechband – cengia cui sovrasta uno strapiombo e che si deve percorrere carponi.
Kuppen – forme mammellonari a calotta (del terreno).
Lähne – valanga (termine usato nel Tirolo).
Latschen – mughi, pini nani.
Lawine – valanga di neve.
Steinlawine – frana.
Leehang – pendìo sottovento.
Lehne – pendìo.
Leiste – cengia esilissima (larga un palmo o qualche dito).
Loch – nicchia.
Luvseite – versante battuto, esposto al vento.
Mauerhacken – chiodi da roccia.
Moräne – morena.
Muhren – sfasciume, sabbia, fanghiglia (trascinate a valle dai torrenti).
Mulde – conca (racchiusa da pareti a dolce pendìo).
Nagelschuh – scarpone chiodato da montagna.
Nische – nicchia.
Pfad – sentiero.
Pfeiler – pilastro, torrione, spuntone di roccia.
Pickelstiel – manico della piccozza.
Plateau – ripiano, terrazza.
Platten – placche (scarse di appigli).
Plattenschuss – zona, superficie, ricoperta di placche.
Plattenwand – parete di placche.
Plattform – terrazza.
Randkluft – crepaccia terminale.
Reepschnurr-Rebschnur – cordello.
Reitriss – fessura per lo più molto inclinata che si supera percorrendo a cavalcioni la cresta dello spuntone che ne forma la parete a valle.
Richsteig – accorciatoia.
Riff – roccione ripido a pareti corrose, disgregate (nelle Dolomiti).
Rille – solco (stretto e lungo a forma di canalino, scavato dall'acqua sulla superficie delle placche).
Ringhacken – chiodi da roccia con anello.
Rinne – solco (non molto profondo, ma verticale).

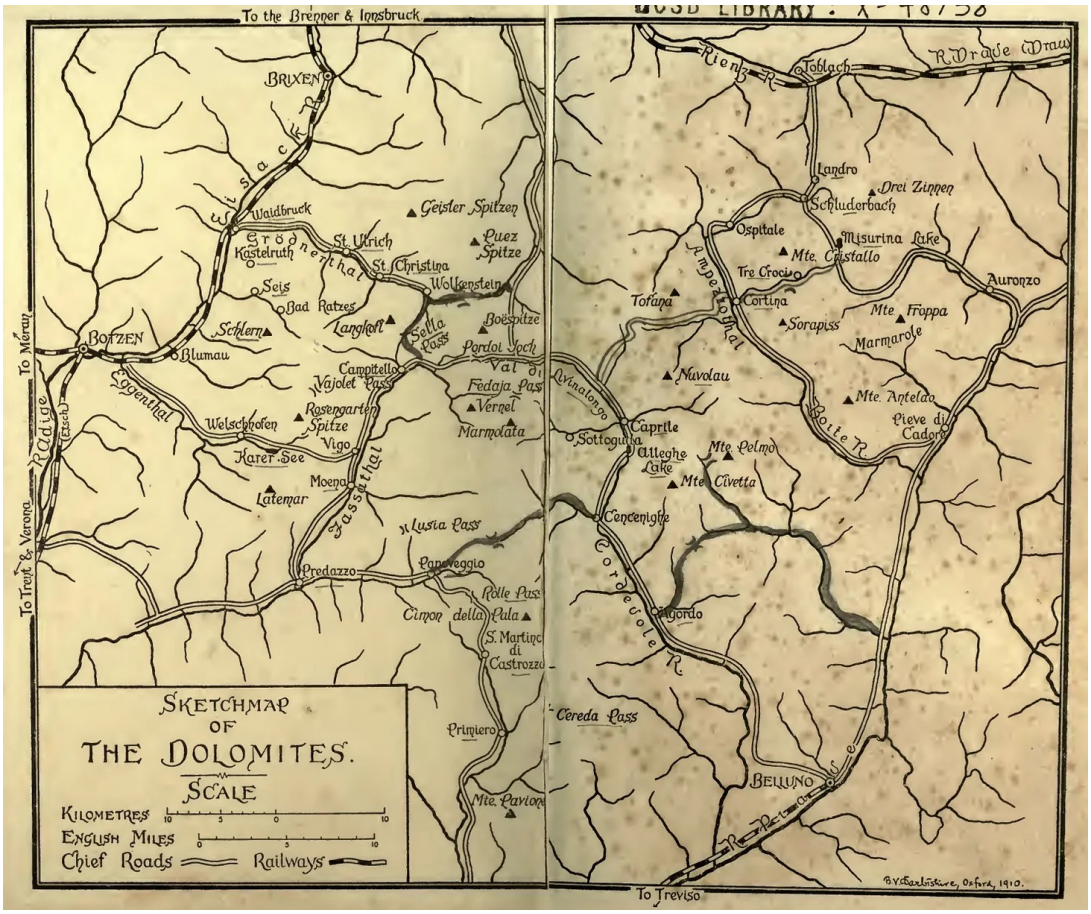
Rippe – costolone (sporgenza della roccia simile ad una cresta, compresa fra due canali verticali).
Riss – fessura (tanto stretta che il corpo non può entrarvi, talvolta vi si possono introdurre le sole dita).
Route – itinerario.
Rücksack – sacco da montagna.
Rundhocker (*Roches moutonnées*) – rocce a forme mammellonari.
Runse – canale (scavato dall'acqua nella roccia tenera).
Scharte – forcella.
Schaufel – paletta della piccozza.
Scheidewand – parete divisoria.
Schleife – ruga, cengia stretta.
Schlucht – gola profondamente incisa fra due montagne.
Schluff – intaglio, solco.
Schlüsselstelle – punto di passaggio obbligato.
Schneebrett – isolotto di neve.
Schneebrillen – occhiali da neve.
Schneebrücke – ponte di neve.
Schneehaube – passamontagna.
Schneereifen – racchette da neve.
Schneeschild – lastra di neve.
Schrofen – pendìo o parete di roccia friabile ricoperta in qualche punto da zolle.
Schrund – crepaccio.
Schulter – spalla.
Schutthalde – conoide di detriti.
Schuttkegel – cono di sfasciume.
Schuttrinne – canalino detritico.
Schwache Pfade – tracce di sentiero.
Seicht – poco profondo.
Seilring – anello di corda.
Sennhütte – malga, cascina.
Skibindung – attacco per sci.
Spalt – crepaccio (nel ghiaccio o nella roccia).
Sporn – sperone di roccia.
Staublawine – valanga di neve farinosa polverulenta.
Steigbaum – piramide umana (cui si ricorre per superare gli strapiombi).
Steigeisen – ramponi.
Steilwand – parete ripida.
Steindauben-Steintauben – piccoli ometti (collocati per segnavia).
Steinmann – ometto, piramide di sassi.
Steinschlag-Steinfall – caduta di sassi.
Stemmkamin - camino largo e liscio che si deve salire puntando la schiena e le gambe, camino d'appoggio.
Strebepfeiler – contrafforte.
Stufe – gradino, salto di roccia.
Stufenschlagen – il gradinare nel ghiaccio.
Tobel – l'alveo incassato di un torrente (termine svizzero).
Traversieren – traversare.
Tritt – appoggio (per i piedi).
Turm – torre, campanile.
Ueberhang – strapiombo.
Unterkunfthaus – rifugio, ricovero.
Vereisung – vetrato.
Verschneidung - angolo diedro (formato dall'incontro di due pareti).
Wächte-Gwächte – cornici (di neve).
Wandel – paretina.
Wandknich – gomito della parete.
Wandpartie-Wandstelle – punto, zona di parete.
Wandschranke – barriera costituita da una parete rocciosa.
Wandstufe – salto di roccia.
Wassereis – vetrato.
Wasserfurche – solco scavato dall'acqua.
Windharscht – crosta ruvida e ondulata prodotta dal vento sulla neve.
Windjacke – giacca da vento.
Witterung – condizioni atmosferiche.
Wulst – rocce panciute, strapiombanti.
Zacken – dente, campaniletto.
Zerklftüung – crepacci (nel ghiacciaio).
Zinne – cima, punta.

Ing. Livio Alberti
Ing. Ezio Micheloni
(C.A.I. Sez. Trento – Seniores S.U.C.A.I.).


THE NATIONAL GEOGRAPHIC MAGAZINE
1914 MAP OF THE NEW BALKAN STATES AND CENTRAL EUROPE
PREPARED BY J. G. BARTHOLOMEW—GILBERT H. GROSVENOR, EDITOR.
Tyrol


NORIC ALPS
RHÆTIAN ALPS
CARNIC ALPS
KARAWANKEN
JULIAN ALPS
DOLOMITES
TRIESTE
VENICE
CARSO
München
Bayern
Wien
Innsbruck
Graz
Ljubljana
Zagreb
Trieste
Udine
Gorizia
Veneto
SLOWENIEN
Dolomiten
Karawanken und Bachergebirge
Julische Alpe
Gurktaler Alpen
Lavanttaler Alpen
Steiner Alpen
Karnischer Hauptkamm
Südliche Karnische Alpen
Friaulisch Julische Venetien

Appendix 4: More maps



1910 Guide to the Dolomites map, SH Hamer.

AREA OF THE REGION

The Dolomite region, then, forms roughly a sort of rectangle. The northern side of this rectangle is the Pusterthal; on the east the Sextenthal and the valley of the Piave down to Belluno, make a convenient border-line; on the south, one might draw a line across from Feltre to Neumarkt (some way north of Trient); while the river Eisak bounds the district on the west.

It is true that there are Dolomites (in the geological sense) in other parts of the Alps than South Tyrol; there is, for example, the Brenta Group, which lies to the north-west of Trient; dolomite rocks occur, too, in the Dauphiné Alps, and in the Err Group, north of Splügen (the Piz d'Aela, the Tinzenhorn, and the Piz Michel). The Dolomites of Tyrol, however, have appropriated the term to themselves; they cover a much larger area than any of the other dolomite rock-formations found elsewhere, and one may fairly claim that by now the name is generally limited to the district indicated.

The name is derived from Déodat de Gratet,

THE DOLOMITES

Marquis of Dolomieu, who took his title from a village of Grenoble in the Dauphiné Alps. He first visited these mountains in 1789, and it is somewhat singular that, while he examined and described the Tyrolese mountains of this formation, he does not seem to have devoted any attention to the peaks near Grenoble, which are composed of similar rock.

Dolomite is a peculiar form of limestone, consisting of carbonate of lime and carbonate of magnesia, and is generally described as "magnesian limestone."

The district is still much less visited by English tourists than it deserves, and, indeed, it is only in recent years that it has become at all popular among travellers of any nationality. So recently as 1873, Miss Amelia Edwards was able to describe her journeyings in this region as a visit to *Untrodden Peaks and Unfrequented Valleys;* she gave ample reason for the comparative isolation which the region then enjoyed: "the absence of roads; the impossibility of traversing the heart of the

ROADS AND COMMUNICATION

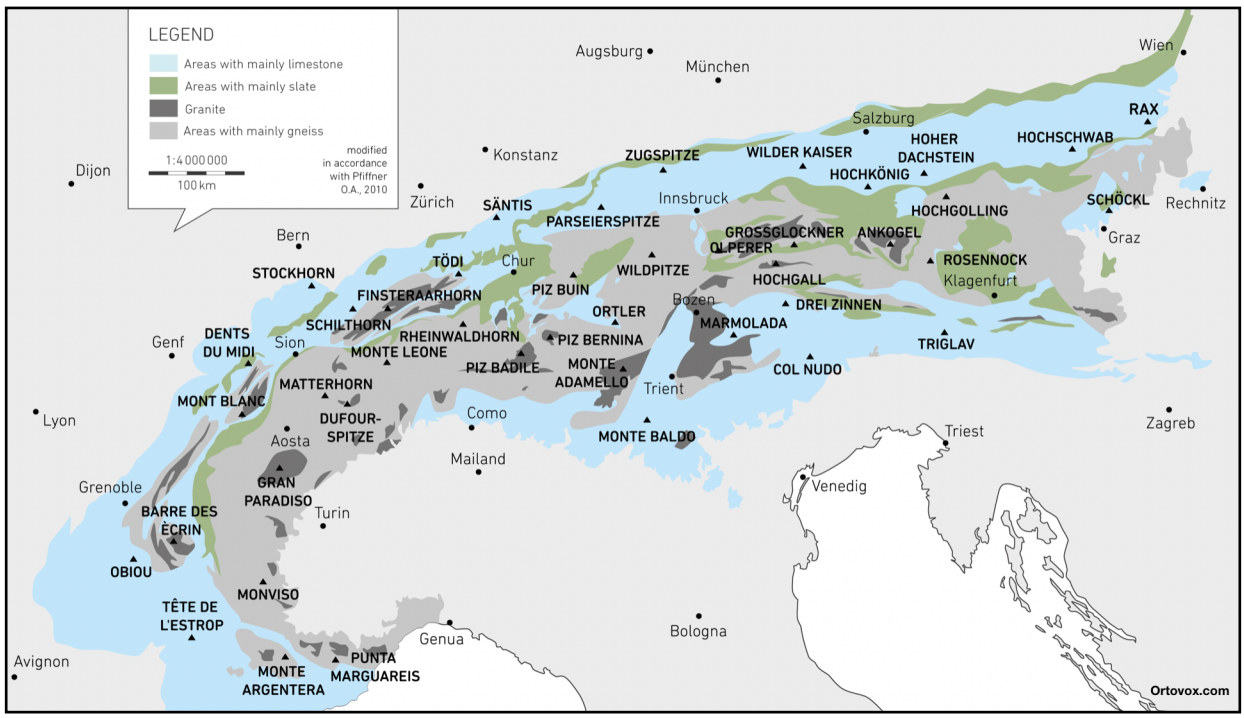
country except on foot or on mule-back; the tedious postal arrangements; the want of telegraphic communication, and the primitive quality of the accommodation provided for travellers."

All this, however, is now changed, and there are those who fear that the Dolomites may speedily share the fate of Switzerland, and be over-run by the "tripper" and the "peak-scalper." Much has been done and is still being done to facilitate transit for the general travelling public; good roads have been made, the railway now runs to points from which the district may readily be reached; telegraphic and even telephonic communication is almost universal, and comfortable accommodation may be met with everywhere.

Happily the district is not yet so overcrowded in the holiday season but that one may still find "unfrequented valleys" where one meets with homely hospitality and courtesy, combined with moderate charges and scrupulous cleanliness. A dress suit is not yet an essential article of one's impedimenta,

pages from a 1910 guide to the Dolomites.

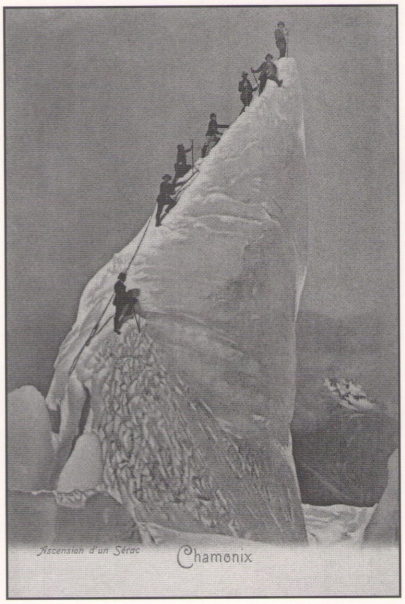
LE ALPI
CARTA FISICA
MARE
ADRIATICO
LIGURE


LEGEND
Areas with mainly limestone
Areas with mainly slate
Granite
Areas with mainly gneiss
1:4 000 000
100 km
modified in accordance with Pfiffner O.A., 2010
Augsburg
München
Wien
Salzburg
RAX
HOCHSCHWAB
HOHER DACHSTEIN
WILDER KAISER
HOCHKÖNIG
ZUGSPITZE
Konstanz
Dijon
Zürich
SÄNTIS
Innsbruck
HOCHGOLLING
SCHÖCKL
Rechnitz
PARSEIERSPITZE
GROSSGLOCKNER
ANKOGEL
OLPERER
Graz
Bern
TÖDI
Chur
WILDPITZE
ROSENNOCK
Klagenfurt
STOCKHORN
HOCHGALL
FINSTERAARHORN
PIZ BUIN
Bozen
DREI ZINNEN
ORTLER
MARMOLADA
SCHILTHORN
RHEINWALDHORN
Genf
DENTS DU MIDI
Sion
MONTE LEONE
PIZ BERNINA
TRIGLAV
PIZ BADILE
MONTE ADAMELLO
COL NUDO
MATTERHORN
Trient
MONT BLANC
Lyon
DUFOUR-SPITZE
Como
Aosta
MONTE BALDO
Triest
Zagreb
Mailand
Grenoble
GRAN PARADISO
Venedig
BARRE DES ÉCRINS
Turin
OBIOU
MONVISO
TÊTE DE L'ESTROP
Genua
Bologna
Avignon
MONTE ARGENTERA
PUNTA MARGUAREIS
Ortovox.com

THE MECHANICAL ADVANTAGE
Tools for the Wild Vertical

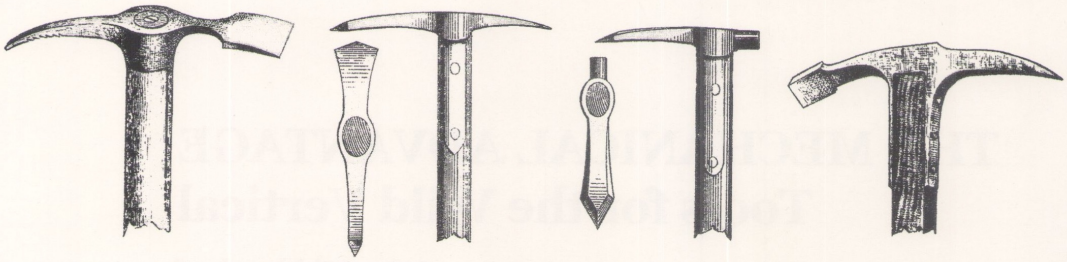
John Middendorf

That well-known year 1492 is also the date of the first mountain expedition using mechanical tools. King Charles VIII commanded a military officer, Antoine de Ville, to climb Mont Inaccessible, a 1,000-foot rock tower south of Grenoble. With grappling hooks, ladders, and the skills gained from sieging feudal castles, de Ville and a dozen of the king's men stormed the limestone monolith. François de Bosco, a member of the expedition, reported the climb as "half a league by means of ladders, and a league by a path which is terrible to look at, and is still more terrible to descend than to ascend." (This is the first—but hardly the last—case of a climber's "emotional measurement," since "half a league" would equal nearly 8,000 feet!) De Ville called the route "the most horrible and frightful passage," and, after arriving at the summit, a large meadow, he sent a messenger scurrying over the edge with a letter for the mayor of Grenoble. It read: "I send you my hearty greetings. When I left the king he charged me to cause an attempt to be made to see whether it was possible to climb the mountain which was said to be inaccessible; which mountain I, by subtle means and engines, have found the means of climbing, thanks be to God." De Ville refused to descend until the mayor verified his ascent and so remained a week in "the most beautiful place that I have ever visited," with flowers of many colors and scents, several species of birds, and a "beautiful herd of chamois, which will never be able to get away." No longer could it be named "Inaccessible," so de Ville rechristened it with its local name, Léguille (it's known now as Mont Aiguille). This first documented mountaineering ascent took place long before mountain climbing was considered recreational exploration, and, even though the impetus for the ascent was political, it was a courageous, technical display of vertical prowess.



Climbers ascend a serac in the French Alps, 1880.

For centuries afterward, climbing either for political reasons or for pleasure apparently didn't exist, and the ascent of Mont Blanc, in 1786, is said to mark the start of the "modern era." And tools were used again, not grappling hooks but several other innovations: a long, sturdy alpenstock for balance and for bridging gaps and tiny crevasses; ice creepers (spikes for the midsole of the boot, a form of the instep crampon present since the fifth century

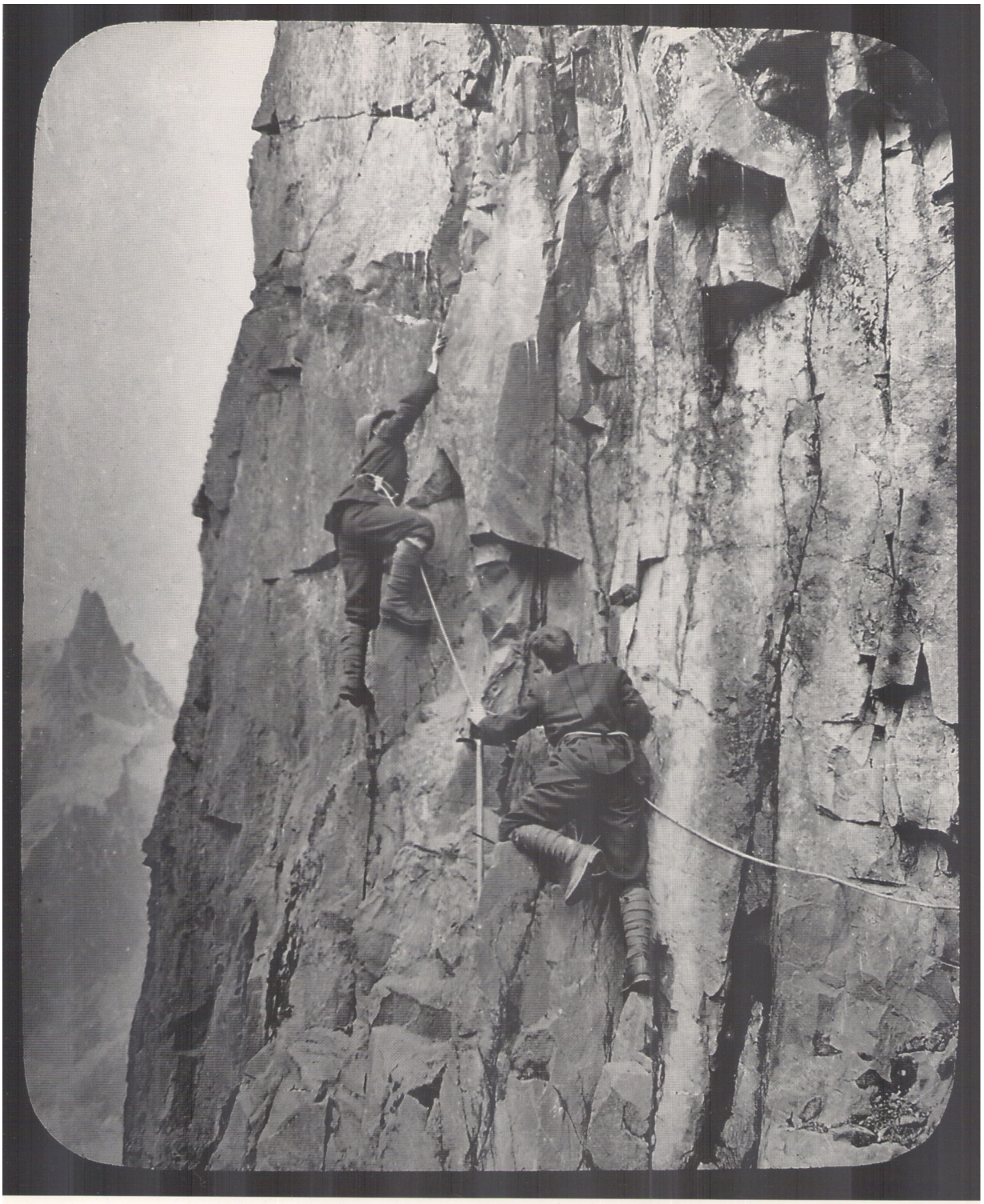


150 Alpine guide Jean Charlet. *Bregeault*

B.C.); and a wood axe or modified hatchet (called, in the local dialect, a *piolette,* a term that later evolved to *piolet).* The ropes of the day were thick and heavy, yet too fragile to catch a falling climber; instead they were used, perhaps with false security, to create human chains on glaciers and ridges. Mountaineers surmounted rock passages up to what is now called class 4 with boldness, shoulder stands, and occasionally by holding or stepping on to an iron spike hammered in with a rock. A century later, the eminent British mountaineering pioneer Edward Whymper carried a claw hook attached to a short rope for grappling an edge in order to maneuver up a short step. Such aids were used only as a supplementary handhold or foothold, as the equipment wasn't designed to support one's full weight. By the late nineteenth century, nearly every high peak in the Alps—and many in the U.S. and Canada—had been climbed by these traditional tools and methods.

As Americans were manifesting their destiny and exploring the West's more remote regions, the Scottish trailbuilder George Anderson became the first to stand atop Yosemite's Half Dome; he used sturdy eyebolt technology intended for securing trails in the Sierra Nevada wilderness. Anderson built a cabin at a spring not far from the dome and in the fall of 1875 methodically climbed the steep

MOUNTAINEERING IN THE TYROL: TURNING A CORNER.



152 On the Grépon, Chamonix, 1890. *George Abraham / Paul Teare collection*

east slab of the formation by drilling a hole and hammering in a bolt, using it as a foothold, and drilling again. Often he left the security of the anchors and free climbed up less steep or more broken sections of the gigantic slab. Since this work took many days, Anderson attached a rope to his upper bolt so that he could descend and re-ascend to his high point easily—perhaps the first-ever use of fixed ropes. John Muir, who climbed the route a short while later, thought that "the skill and courage of Anderson have not been surpassed."

Farther east, Wild West ingenuity paved the way for the first ascent of Wyoming's spectacular Devil's Tower in 1893, when ranchers Willard Ripley and William Rogers spent six weeks engineering a ladder of wood spikes, connected by rope, up a 350-foot vertical crack on the southeast side of the tower. The summit was attained during the Fourth of July celebration and the U. S. flag was proudly planted on top.

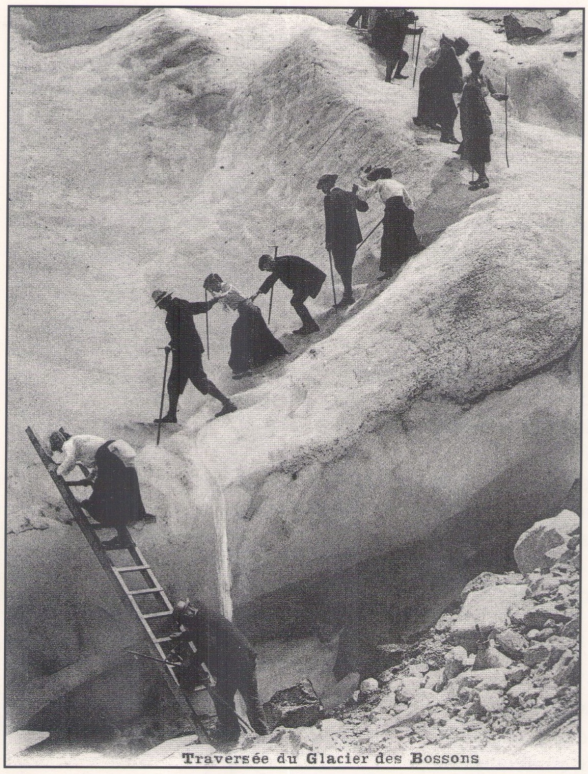
Like de Ville's ascent of Mont Aiguille four hundred years earlier, these climbs were isolated events done by rugged individualists, and, although American climbers pioneered rudimentary belay and safety techniques for the first ascent of the Grand Teton in 1898, the marriage of technology and climbing really began in Europe, where climbing techniques were more refined and specific equipment for technical climbing appeared around the turn of the century.

Mauerhaken und Karabiner und Dülfersitz

The first pitons—little more than iron spikes with rings—became available at this time. The tradition of the day, to keep purity in the passion, was to use pitons moderately, preferably only as a means to facilitate descent. But as climbers began to eye the steeper mountain faces with interest, they realized that the traditional methods would never be safe for upward passage on such vertical beasts. The imposing challenges of the unclimbed walls of the Eastern Alps required devising a new, systematic approach, broadening rules and modifying means. New and stronger manila ropes allowed for tension traverses and short lead falls, and the use of pitons for ascent became more frequent. In this time before carabiners, to supply some protection for difficult vertical climbing, a short piece of cord was tied around both the ring of the piton and the rope.

At the beginning of the twentieth century an Italian guide named Tita Piaz created intricate new techniques and climbed inspirational routes (he completed one with a Tyrolean traverse anchored by an iron ball tossed between two boulders on the summit). In 1907 he climbed the steep 1,200-foot southeast face of the Torre Est in the Dolomites, and, a year later, in the Kaisergebirge, he led a team up the 1,500-foot west face of the Totenkirchl, a challenging route even today. Piaz was willing to engineer solutions for upward passage, thus abandoning the old doctrine of not relying on gear.

In the Western Alps, where the mountains are more alpine,

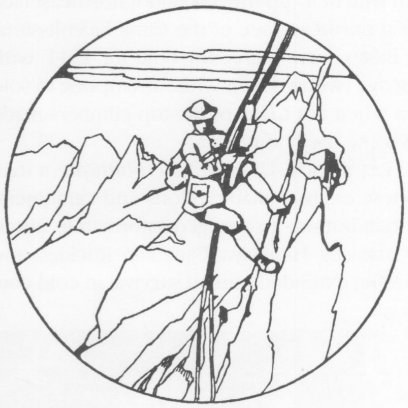

Traversée du Glacier des Bossons

artificial aid was considered unsporting, but in the Eastern Alps, with its spectacular vertical limestone cliffs, a new standard arose. When the Italian expedition led by the Duke of Abruzzi returned from the Karakoram in 1909, photographer Vittorio Sella's lithographs of the stupendous rock walls of the Baltoro must have sparked many a climber's imagination and provided additional rationale for scaling the steep cliffs at home. Climbing then was still largely a gentleman's—and gentlewoman's—sport, and guided excursions were the norm, but some of these outings were anything but leisurely. In 1910 the Italian guides Angelo Dibona and Luigi Rizzi, plus German clients Guido and Max Mayer (who were as expert and experienced as their guides) climbed the north face of the Cima Una in the Dolomites, a 2,600-foot wall with continuous steepness and exposure. The team had developed customized pitons (*Mauerhaken*) and ascended with the help of new rudimentary aid techniques and rope maneuvers.

Better climbing through technology is not just about improved ropes and specialized hardware. Equipment for surviving the elements contributed equally to rising standards. Before his disappearance in 1895 while reconnoitering Nanga Parbat, Albert Mummery had developed lightweight silk bivouac tents and insulating gear sufficient for living in extreme conditions. Prior to World War I, warm, lightweight garments were evolving, and, with this all-weather equipment, climbers could spend multiple days and nights in harsh conditions.

Tom Frost

Beginning around 1910, a trio of inventive German climbers took advantage of modern metallurgical materials. Otto Herzog, having seen a pear-shaped *karabiner* on members of a fire brigade, developed the first steel carabiner for climbing. Hans Fiechtl, a master of roped climbing maneuvers, invented and manufactured a piton with an eye to supplement the ones with rings. Hans Dülfer developed a new set of methods, including a belay device using two carabiners; frictionless tension traverses; sturdier belay anchors; and the *Dülfersitz*, the body rappel that would be used for the next half century by climbers worldwide.



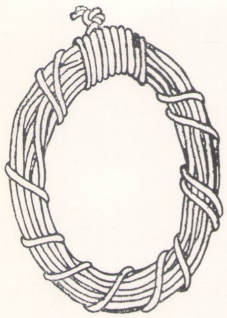
These three innovators of new tools and techniques were great friends and together and separately they pioneered the most visionary big walls of the day, some requiring several days of difficult free and aid climbing. The new protection devices allowed a bolder style of climbing that combined traditional "free" methods with technical "aid" methods, allowing the climber and the belayer to remain firmly affixed to the rock on routes whose sheer steepness and frequent overhangs had previously been unthinkable. In 1912 Dülfer climbed the imposing east face of the Fleischbank, and a year later he did the west face of the Cima Grande, the centerpiece of the Tre Cime di Lavaredo group. His death at twenty-three, on the Western Front in 1915, cut short what surely would have been an incredible climbing career.

The Sporting Way

The era of mechanically assisted rock climbs of the Eastern Alps was not without competition. Incredibly bold vertical routes were climbed without any mechanical protection at all—what we would call "free-solo" today. Georg Winkler, a pioneer in such climbing, made a number of impressive climbs, including the first ascent in 1887 of the eastern Vajolet Tower, a year before his death at age eighteen during a solo attempt of the Weisshorn. Many climbers in later years were to emulate Winkler and reject the use of ropes and aid, even though he himself used a grappling hook on occasion. Footwear evolved from heavy nail-spiked boots to lighter felt-soled shoes developed by the Simond firm, opening a new era of free climbing with leaders who morally opposed reliance on gear.

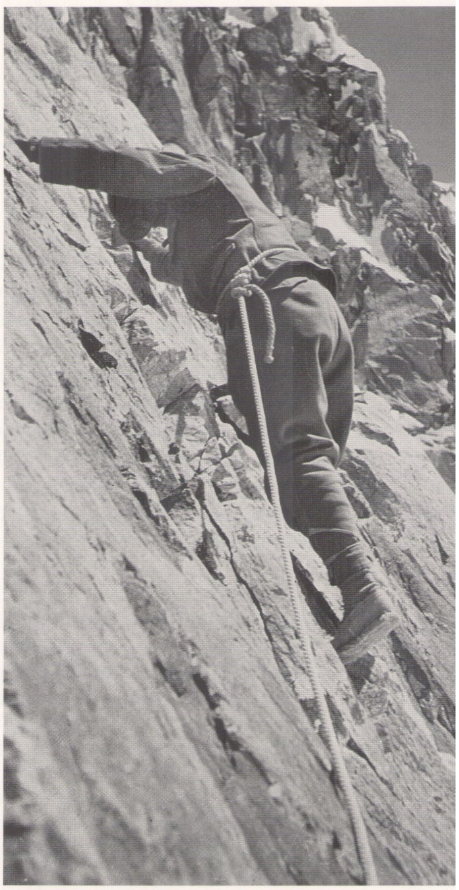
Paul Preuss, a vocal and influential Austrian, vigorously denounced the use of pitons and rope maneuvers as a lower standard. He wrote six climbing rules:

> First, one should not only be equal to any climb that one undertakes, but be more than equal to it. Second, the standard of difficulty which a climber can conquer with safety when descending, and for which he can consider himself competent, with an easy conscience, should represent the limit of what he should attempt on his ascent. Third, hence the use of artificial aids only becomes justifiable in case of sudden threatening danger. Fourth, the piton is an emergency aid and not the basis of a system of mountaineering. Fifth, the rope may be used to facilitate matters, but never as a sole means to make a climb possible. Finally, the principle of safety is one of the highest principles. Not the spasmodic correction of ones own want of safety, obtained by the use of artificial aids, but that true primary safety which should result, with every climber, from a just estimate of what he is able, and what he desires, to do.



Among Preuss's 1,200 ascents, his routes with Paul Relly up the 3,000-foot northeast face of the Crozzon di Brenta and the 800-foot vertical northeast face of the Cima Piccolissima, plus his solo of the east face of the Campanile Basso, were incredibly bold for 1911, with some pitches still rated 5.9. In 1913 Preuss died at age twenty-seven while attempting to solo the north face of the Manndlkogen. It was an era when not many of the top climbers made it to thirty. Perhaps the new safety methods had some merit after all.

The year 1919 saw the publication of Guido Rey's book *Alpinisme Acrobatique*, a treatise on the "artificial" techniques utilizing the latest, easily available pitons and carabiners. And, after World War I, international climbing organizations exchanged information about remote expeditionary climbing in the Andes, Caucasus, Himalaya, Canadian Rockies, and Alaska, increasing the collective knowledge regarding extended human survival in cold conditions. One of the outstanding alpinists of the era, Willo Welzenbach, was the innovator of both ten-point crampons that fit the entire sole of the boot and shorter ice tools. He also created a standard rating system (Grades I to VI) based on his experience with hundreds of routes in both the Western and Eastern Alps. The post-war era also brought higher-quality woven ropes and stronger carbon steel for carabiners.



Fritz Wiessner on the first ascent of Mt. Waddington, Canada, 1936. Note his rope-soled shoes.

William P. House

Big walls were coming of age, and pre-war pioneers—those who were still alive after the war—continued to push standards in the 1920s. Gustav Haber and Otto Herzog climbed the 1,000-foot *Ha-He Dihedral* on the Dreizenkenspitze in 1923, a technical big-wall route requiring two bivouacs; it was not repeated, despite many attempts, until the 1950s. Hans Fiechtl's *Ypsilon Riss* (5.9, A1) on the 1,200-foot north face of the Seekarlspitze was perhaps the most difficult of the era.

Prior to his 1928 immigration to the United States, Dresden native Fritz Wiessner teamed up with aid master Roland Rossi and adventurer Emil Solleder for some of the wildest long rock adventures in the Alps, including the southeast face of the Fleischbank (V+), and the north wall of the Furchetta (VI). Trusting the security of the newer pitons, climbers became willing to risk lead falls and free climbing standards rose. In 1925 Solleder and Gustl Letten-bauer climbed the northwest face of the Civetta in a day, a 3,700-foot 5.9 route in the Dolomites, carrying only fifteen pitons for protection and belays.

A year later, in the Julian Alps (now part of Slovenia), Stane Tominsek and Mira Marko Debelakova spent two days climbing the technical 3,000-foot north face of the Spik, their reliance on the new gear making it possible. Tools for safe upward passage were improving, and in 1929 Luigi Micheluzzi and team climbed the Marmolata, the highest peak in the Dolomites, by its steepest route, the 1,800-foot south pillar. Pitons were used for protecting the lead climber and for occasional aid on these historic big walls, but in deference to the strict anti-piton standard of the Western Alps, they were used sparingly.

New Ideas Come to America

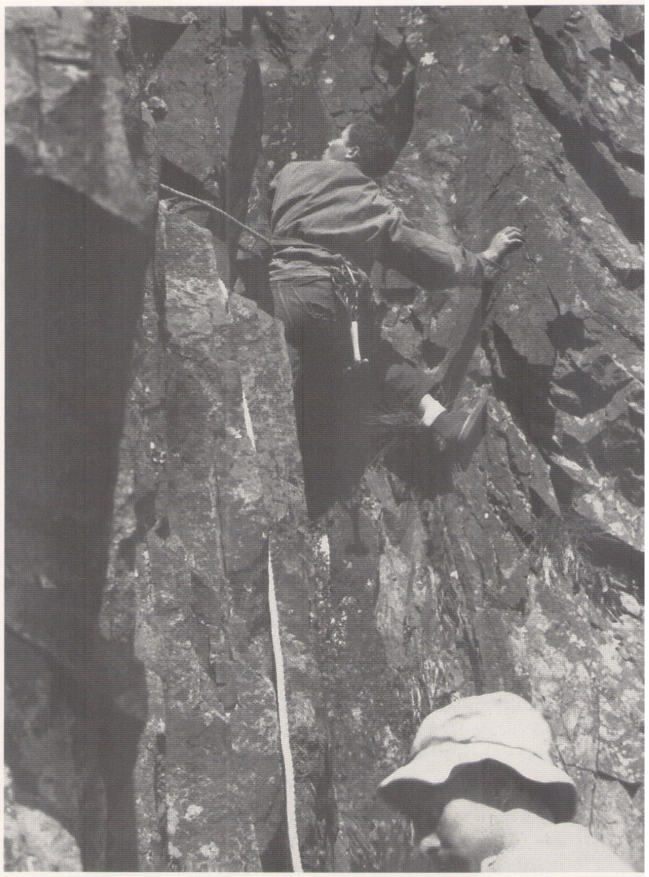
It took some time for European tools and techniques to filter into North America. In 1916 Conrad Kain climbed two imposing Canadian peaks, South Howser Tower and Bugaboo Spire, without the use of any hardware. These were the most difficult rock routes yet done in the Western Hemisphere (rated 5.6 today), and Kain considered them harder than his alpine route on Mt. Robson, today considered a far more serious proposition due to its length and objective hazards. In the Adirondacks, John Case, an early president of the Appalachian Mountain Club (AMC), applied skills and belay techniques learned in Europe, using a rope to belay, but without protection. Albert Ellingwood, a Colorado College political science professor (who had also learned climbing techniques during visits to Europe) introduced rudimentary belay techniques to the Rockies and pioneered technical climbing in Colorado when he scaled Lizard Head in 1920, using three iron spikes similar to telephone-pole steps. Today it is a loose and scary 5.7+ route and still the most difficult Colorado summit to attain. Ellingwood became the finest rockclimber in the land, and his improbable 1925 route on the 2,000-foot northeast buttress of Crestone Needle (5.7) with Eleanor Davis, Stephen Hart, and Marion Warner, using only a rope and an unanchored belayer for safety, was the most inspiring and the highest (to a 14,197-foot summit) rock climb in America at the time.

A wooden wedge.

Ascent Archives

In 1927 protection specifically designed for rock climbing was introduced to North America. Brothers Joe and Paul Stettner emigrated from Germany after getting their first vertical experiences in the Kaisergebirge, inspired by Hans Dülfer and his steep routes and techniques. After a few years of working in Chicago, they found themselves missing the mountain life they had been born into. They ordered ring-angle pitons and carabiners from Munich and headed out on their motorcycles to Colorado. There they procured a rope at a hardware store and pioneered their historic 5.7 route on the east face of Longs Peak, using "running belays" and the European pitons for protection. This ascent of *Stettners' Ledges* marks the dawn of mechanically protected climbing in the U. S.

In France that same year a seed was germinating that would change the nature of climbing profoundly. This was the development of a portable set of tools for anchoring in rock anywhere: the drill and expansion bolt. The inventor/manufacturer, Laurent Grivel, used these new tools on the first ascent of the spectacular Pére Eternal, a 200-foot sliver on the north ridge of the Aiguille de la Brenva. Bolts were used sporadically in the following years, including on the south ridge of the Aiguille Noire de Peuterey, but little concerning this technique is described in the literature. The official inauguration of bolts to the climbing world was not to come for a while.



Bill House and Bob Bates on the first ascent of the *Henderson Route* (5.5), Cannon Cliff, New Hampshire, 1940. (Note the ball-peen hammer and sneakers.)

Kenneth A. Henderson

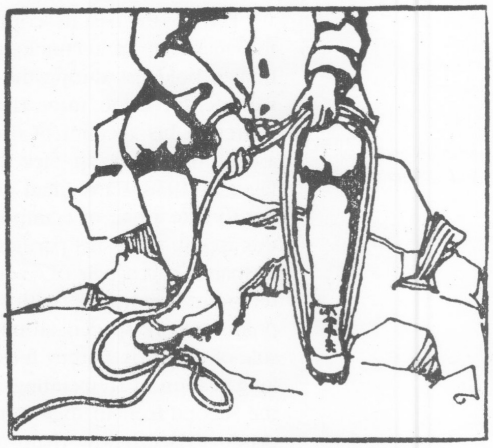
On the eastern edge of North America, members of the AMC who had visited Chamonix and the Dolomites returned with new ropes, hardware, and safer belay methods. Robert Underhill, brother and sister Lincoln and Miriam O'Brien (later Underhill), Fritz Wiessner, Bill House, Elizabeth Knowlton, Ken Henderson, and cousins Bradley Gilman and Hassler Whitney all made belayed ascents of the steep rock faces of Cannon Cliff and Cathedral and Whitehorse Ledges in the White Mountains of New Hampshire. Underhill exported the knowledge west when, as chairman of the AMC's Committee on Rock Climbing, he wrote an article for the 1931 annual *Sierra Club Bulletin* describing the latest rope-management techniques. This vital information enabled California pioneers to open a whole new range of routes in the Sierra, laying the groundwork for the technical big-wall routes to come.

"Impossible" Walls

Back in Europe, at the same time, a bold new era for big-wall climbing began when the first of the famous "last great problems of the Alps," the north face of the Matterhorn, fell to the brothers Toni and Franz Schmid. Pitons began to appear more widely in both the Western and Eastern Alps, and climbers began to recognize that the use of protection systems was facilitating superb achievements on extremely difficult vertical terrain. As the popularity of the sport increased, the climbing population evolved from consisting of exclusively aristocrats and guides to a broader set of athletes, doctors, lawyers, engineers, and a new breed of working-class heroes, one of whom became legendary.

Emilio Comici was an Italian longshoreman when he began caving on weekends. After a particularly difficult cave exploration—setting the world's depth record near Trieste—he ran to the nearest summit and made a pact to forever spend his free time in the open air of the mountains instead of underground. He became an expert in the techniques pio-

neered by Dülfer, Herzog, and Fiechtl, and revolutionized climbing by perfecting a new style well suited for the extreme cliffs of the Dolomites, and ultimately, the big walls of the world. Comici was the inventor of modern aid techniques, such as using multi-step aid ladders, solid belays, complex rope maneuvers, hanging bivouacs, and climbing with a trail rope as a means to stay connected to the belayer for hauling up extra equipment. Realizing that he had a choice either to reject the use of mechanical aids or to accept them wholeheartedly, he chose the latter and made heavy use of the new tools.



In 1931 he put the new systems to the test on the 3,600-foot northwest face of the Civetta, and the result was the steepest and perhaps the most difficult climb in the world (to this day it is still a challenging twenty-six pitch vertical adventure). Not satisfied, he wrote, "I wish some day to make a route and from the summit let fall a drop of water and this is where my route will have gone." He realized his dream of such a route—a direttissima, as it became known—with his direct line up the incredibly steep 1,500-foot north wall of the Cima Grande in 1933. True, his line wavers slightly but no more than if the wind had buffeted the mythical drop of water back and forth. On the lower half of the wall Comici, Giuseppe Dimai, and Angelo Dimai used just seventy-five pitons—one every ten feet, on average—hardly excessive considering that the wall overhangs continuously and is composed of less-than-solid rock.

Comici freely shared his expertise, inspiring many with his dream of the ultimate aesthetic route. He died climbing, at age thirty-nine, never knowing that his dreams and philosophies were to create passionate splits in climbing attitudes as new technologies developed.

The 1930s were an age of innovation in Europe. The leader of a talented new group of climbers from Fontainebleau, Pierre Allain, developed lightweight goose-down clothing and bivouac equipment suitable for surviving on the steep, icy faces of the Western Alps. In 1935 he made the first ascent of the frigid north face of the Petit Dru, near Chamonix, with Raymond Leininger. This was a pioneering, two-day free and aid route that combined the challenges of an alpine route with the technical aspects of the Dolomite and Kaisergebirge vertical walls.

Around the same time, the Simond firm, near Chamonix, began to manufacture high-quality pitons, equipping a new breed of extreme climbers. Gino Soldà, Raffaele Carlesso, Domenico Rudatis, Ettore Castiglioni, Raimund Schinko, Alfred Couttet, and Giusto Gervasutti all made incredible technical climbs during this period, but the climber who stands out most prominently, both for the quality of his routes and the breadth of his vision, was Riccardo Cassin. This sturdy Italian mastered aid techniques and took them to new extremes on the major routes of the period, including the *Walker Spur* of the Grandes Jorasses (with Gino Esposito and Ugo Tizzoni), the northeast face of the Piz Badile (with Esposito and Vittorio Ratti), and the north face of the Cima Ovest (with Ratti). Cassin's routes continually pushed standards of difficulty and commitment.

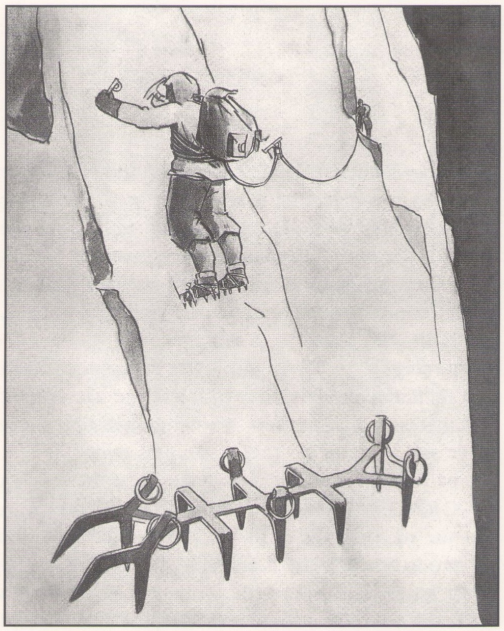


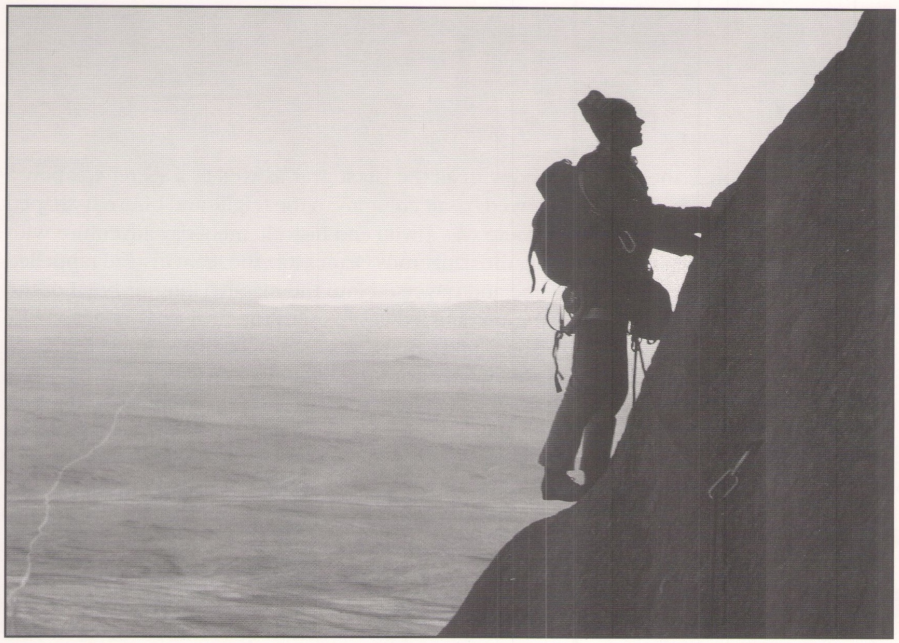
Illustration courtesy of Anderl Heckmair

Perhaps the best description of the marriage of technology and human boldness during the interwar period came from Heinrich Harrer, in his account of the first ascent of the north face of the Eiger in 1938. Harrer had elected not to take a pair of crampons for the ascent, while his partner Fritz Kasparek had a pair of traditional ten-point crampons with sharp points evenly spaced around the sole of the boot. As they finished a long session of step-cutting across the Second Icefield, they were surprised to see below them Anderl Heckmair and Ludwig Vörg rapidly approaching, using the "fashionable" twelve-point crampons invented by Laurent Grivel, a guide and blacksmith of Courmayeur, in 1931. The addition of two front-facing prongs allowed a climber to ascend on his toes, facing forward rather than using the traditional French method of keeping the foot flat on the ice, as if frictioning up a slab. "I looked back, down our endless ladder of steps," Harrer wrote later. "Up [the Second Icefield] I saw the New Era coming at express speed; there were two men running—and I mean running, not climbing—up it." The two teams joined forces for the historic first ascent of the Eigerwand. This climb should have marked the opening of a whole new era, but the outbreak of another tragic European conflict soon put an end to the risky vertical games.

In the less frenetic U. S., technical climbing developed slowly. Transatlantic travel was still expensive and slow, and information about the new European techniques was hard to come by. The only available English literature came from Britain, where traditional mountain guide/client excursions up the 4,000-meter Alpine peaks were still the norm. But that is not to say there was no progress. Dwight Lavender designed and produced the first pitons made in the U. S. at the engineering workshop of Stanford University. In 1932 the *American Alpine Journal* published a note explaining the world's climbing systems, including the use of "safety snaps" (carabiners), then a rare item in America. The article begins, "Not withstanding feeble protests by a few climbers, mostly of the past generation, hammers, pitons, and safety snaps have definitely entered into modern climbing technique." With the new tools and safety methods becoming more widely known, climbers began to eye the challenges unpeeling in the Tetons, Yosemite, and the Southwest.

Big-Wall Epicenter

Dick Leonard, a San Francisco Bay Area law student, formed the Cragmont Climbing Club in 1932 and, with a few others, began practicing the new techniques on the local rocks in Berkeley. He ordered carabiners and pitons from Sporthaus Schuster in Munich and in 1933



Larry Coates climbing the *Original Route* up Shiprock, New Mexico.

Ed Webster

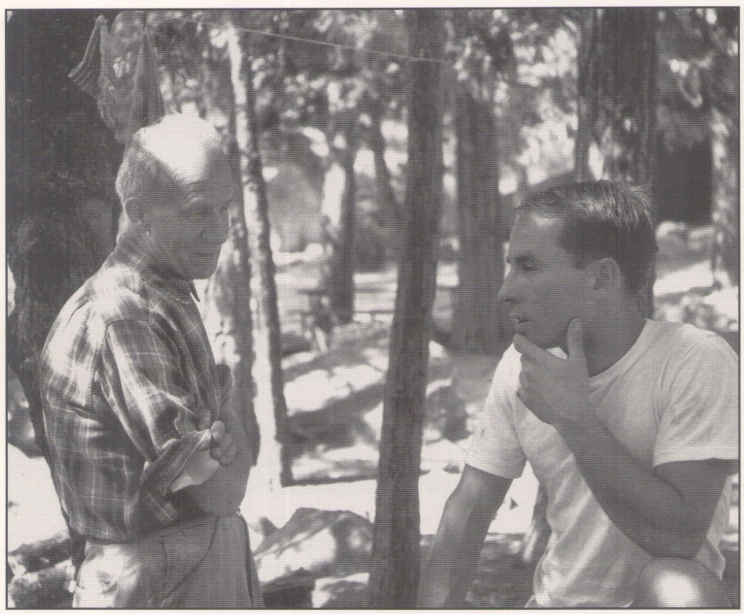
began putting them to use on the spectacular granite cliffs of Yosemite, marking the first use of climbing hardware in the Sierra Nevada. The European pitons were made from mild steel, and, though well suited for the limestone of the Alps where their softness allowed them to conform securely to undulating cracks in the brittle rock, they were usually difficult to remove once placed, and far from ideal in California granite. Leonard made sure he had an adequate supply of of them (fifty-five, all told) and in 1934 teamed up with Jules Eichorn and Bestor Robinson for the first ascent of Higher Cathedral Spire, the most technical aid climb in North America at the time, and the first of a long lineage of its kind in Yosemite.

Leonard, a student of rope dynamics, developed the body, or hip, belay, with the rope surrounding the waist (Europeans often used a shoulder belay, which presented torque problems unless one's feet were perfectly braced). This Leonard combined with a refinement in which the belayer absorbed the shock of a fall by letting the rope hum around his waist for a few feet before stopping the fall with a gloved "brake" hand. This "dynamic" belay resulted in a lower load on the anchors and the rope; the falling climber and the belayer also experienced a less severe jolt. Using this new system, Leonard and others felt more confident risking longer falls on their bold forays.

Further east, the 1,700-foot volcanic plug of Shiprock, rising from the New Mexico desert, stood as one of the last prominent mountaineering challenges in the continental U.S. In 1937 Bob Ormes and Bill House attempted a direct route to the summit via what is now known as Ormes Rib, where they encountered difficulties placing gear. With marginal protection and with no way of using aid in the shattered rock, the team's efforts culminated in a twenty-foot fall by Ormes. He retrieved the deformed piton that had stopped him and later wrote an article entitled "A Piece of Bent Iron" in the *Saturday Evening Post*, offering a warning to those who would push their luck on such severe climbs.

Such warnings often act as incentives, and in 1939 Dave Brower, Raffi Bedayan, John Dyer, and Bestor Robinson set out from Berkeley for Shiprock. Well versed in the new

Yosemite techniques, they were armed with all the latest gear, as well as a secret weapon: a bolt kit. Their ascent up the crazily skewed basalt columns to the fragile and bizarrely shaped tuff-breccia of the upper part of the route was a wild and historic multi-day adventure with difficult aid and free climbing. Avoiding the dangerous Ormes Rib, the team instead rappelled down a gully in the tortured landscape and traversed into the massive interior bowl of the decaying volcanic plug. From here they scrambled easily up to the final crux, a steep, 200-foot step to the summit. After many pitons and a scary lasso over a horn, Shiprock was won. And the secret new tool was officially initiated into the climbers' repertoire: the men had placed four bolts. Aware of the controversial nature of what they had accomplished, the four Shiprock climbers self-deprecatingly called themselves "rock engineers," but this first North American use of drill and bolt marked the dawn of another new age in the history of technologically aided climbing, and new visions of the possible soared. Brower, now an internationally famous conservationist, helped set the precedent of fixing climbing anchors in the wilderness. Could he have known the future implications of his act?



John Salathé and Yvon Chouinard in Camp 4, Yosemite Valley, 1964

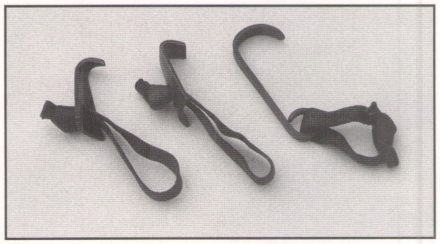
Tom Frost

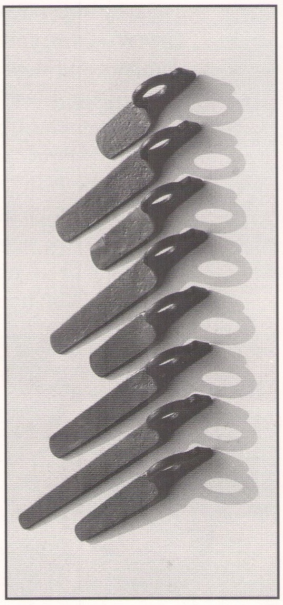
Yosemite Valley's Half Dome was once more the scene of the next big advance in technical climbing standards. The beautiful southwest face of Half Dome had been attempted as early as 1933 by Leonard and other Sierra Clubbers, whose attempts convinced them that it could not be climbed without excessive use of pitons. Leonard wrote that "the undefined borderline between justifiable and unjustifiable use of direct aid would have to be crossed." But in 1946 John Salathé and Anton (Ax) Nelson climbed the sloping face by a difficult 5.8, A3 route using a revolutionary new piton, one that could be removed easily and reused numerous times. With these, the team was able to efficiently manage the 150 placements required for the 900-foot route.

Salathé, a Swiss immigrant, was a blacksmith who had a mid-life spiritual conversion; this led him to devote his free time to ascetic meditation and the good clean life of the mountains. When he began climbing, in 1945, he found that the available pitons were too soft to be driven into narrow granite cracks without buckling, so he turned to his forge. In his San Mateo shop Salathé used high-carbon chrome-vanadium steel (the same high-strength steel that was used for Model-T Ford axles) to forge ultra-strong pitons that could be hammered

into the hard Yosemite granite—as well as hammered back out—without getting mangled. He also created a new tool that Nelson coined a "sky hook," the first hook for climbing Yosemite's granite edges.

Salathé's tough, thin pitons became locally famous after Salathé and Nelson's arduous 1947 ascent up a 1,200-foot chimney to the fantastic lonely spire of granite known as the Lost Arrow. With a rack of eighteen of Salathé's forged pins, twelve carabiners, and a few bolts, the two friends spent five devastatingly hot days on the route, a major psychological breakthrough in multi-day big-wall climbing. *The Lost Arrow Chimney* was a harbinger of the longer routes of the future, ones that would require hundreds of pieces of protection and aid placements, impossible without the kind of ultra-tough piton developed by Salathé. (Yvon Chouinard, a decade later, paid homage to Salathé when he named his similar pitons "Lost Arrows.")





Skyhooks (above), and a selection of Chouinard Equipment "Lost Arrow" pitons.

Tom Frost

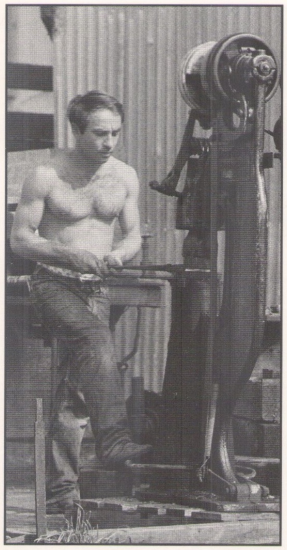
Technology was developing on many fronts, and software as well as hardware changed drastically after World War II. Nylon, developed by the DuPont Chemical Company, was used to make strong and resilient three-strand laid ropes. Revolutionary in its time, this rope was ultra-strong but stiff and heavy compared to modern kern-mantel designs. Nylon fabric, used in clothing, also allowed climbers to go to the cliffs more boldly, with lighter weight gear, than ever before.

Climbing gear was becoming more readily available by the early 1950s. Allen Steck, a Berkeley native who participated in several historic routes (including the first ascent of Yosemite's second major big wall, the north face of Sentinel Rock, in 1950) managed the Ski Hut, a Berkeley store selling all the latest climbing innovations, including Cassin pitons, aluminum army carabiners, and the new nylon ropes. (Steck spent many months climbing in Europe in 1949, introducing the first nylon rope to the Eastern Alps.) The Ski Hut also sold climbing shoes, which were becoming lighter and more sophisticated each year, and also the well-crafted aluminum carabiners of Raffi Bedayn (who had shortened his last name by this time). A typical rack of thirty-five carabiners, if they were aluminum, meant that the load pressing down on the climber's shoulder was now five pounds less.

Lighter equipment also meant that the remote ranges could be visited more efficiently. In the late 1940s Fred Beckey began ticking off routes in the Bugaboos and North Cascades. In Alaska he climbed the Devil's Thumb, Kate's Needle, and Michael's Sword, three spectacular granite peaks requiring huge loads of technical equipment.

The Modern Era

Audacious new climbing challenges in the Southwest, such as Spider Rock and the Totem Pole, were climbed by men with full arsenals of equipment in the mid-1950s.



Yosemite rocketeers were pushing standards throughout the West with the aid of the latest wide-angle pitons from Jerry Gallwas and knifeblades from Chuck Wilts.

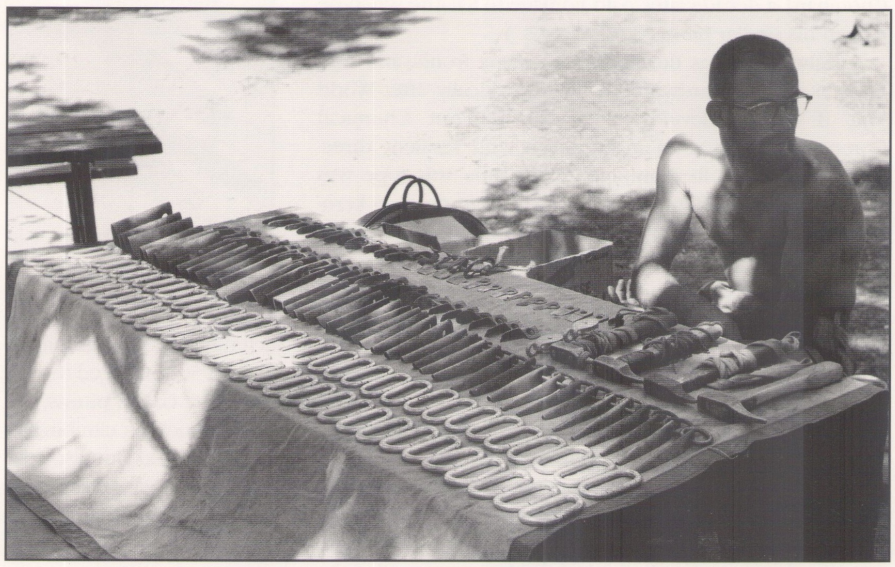
It wasn't just North Americans setting the standards in the early 1950s. Another real breakthrough was the first ascent of the remote Patagonian peak of Fitzroy in 1952 by the powerful French climbers Lionel Terray and Guido Magnone. The Fitzroy climb, and the expedition of which it was the culmination, pushed the climbers and their equipment to new limits and was a triumph of the spirit facilitated by the latest lightweight and functional equipment.

The modern big-wall era began in 1955 when Walter Bonatti took climbing into a new dimension with his six-day solo ascent of a new route on the southwest pillar of the Petit Dru. Considered by many as the finest single climb of all time, this Dru ascent dramatically illustrated the potential of technology and technique combined with the power of an indomitable human spirit. The proof that a solo climber could self-belay up an incredibly difficult and technical steep route meant that there could be no more limits to the biggest rock faces in the world.

Above:
Yvon Chouinard, Ventura, California, 1967.

Right:
Royal Robbins racking up in Camp 4 prior to the second ascent of *The Nose* of El Capitan. Yosemite Valley, 1960.

Photographs:
Tom Frost



In Yosemite, distinctions of the new style evolved. Few argued that pitons and bolts were not valid mountaineering tools. The inventive Royal Robbins, however, drew an aesthetic line, one that balanced the art required to find a viable weakness up a smooth wall with the minimum number of tools. He would return from each adventure with an exact count of the total number of pitons and bolts that his team had used. He also developed efficient techniques for living on the big stones, including the modern hauling system utilizing jumars (a Swiss-made rope-ascending tool designed for collectors of bird's eggs from cliffside nests), and his 1957 ascent of Half Dome's northwest face ushered in a new era.

Warren Harding, often thought of as Robbins's nemesis, was a world-class climber in all respects, though sometimes taking a different approach. Harding would choose his finest routes not by scrutinizing a wall's weakness, but rather for its strength and formidable location. His first ascent of *The Nose* of El Capitan was a testament to his tenacity and endurance. The climb required 125 bolts, specialized large pitons (made from the sheet-metal legs of a stove, hence the name "Stoveleg pitons"), and immense lengths of fixed rope.

Unlike Harding, Robbins rejected excessive use of bolts and fixed ropes and proceeded to prove to himself and the climbing world that a better style was possible. In *Basic Rockcraft*, the 1971 book that taught a new generation of climbers, Robbins wrote, "Like many of the technological wonders of modern man, bolts are at once a blessing and a curse. They make possible some of the finest rock climbs on earth by opening up stretches of blank and otherwise unclimbable rock. But they also diminish the value in climbing by making it possible for anyone to go anywhere if they are willing to drill." Robbins pushed standards with every major route and carried American tools and techniques to remote areas. His ascent of the direct west face of the Dru with Gary Hemming, and of the southeast face of Mt. Proboscis in Canada's Logan Mountains with Jim McCarthy, Layton Kor, and Dick McCracken (during which only two bolts were placed) were testpieces of the modern art of finding the most aesthetic weakness up a major wall and climbing it alpine style.

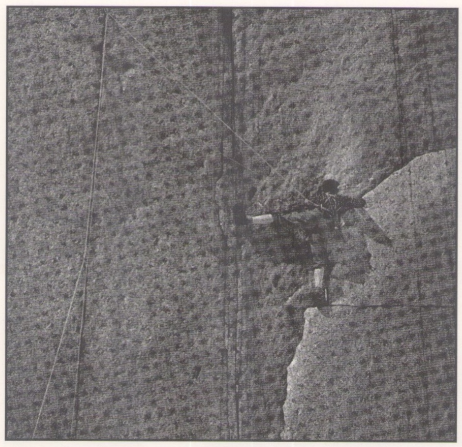
With airplane access, lightweight clothing, sleeping bags and tents made of new insulating and hydrophobic synthetic fibers, and tools and techniques developed on the walls of Yosemite, the best climbers of the 1960s tackled multi-day routes in other remote areas: the Bugaboos, the Troll Wall of Norway, the Ruth Gorge in Alaska, the Rocky Mountains of Canada, and the Paine and Fitzroy groups in Patagonia. All were arenas of the wild vertical.

Tom Frost on the first ascent of *The Salathé Wall* on El Capitan. Yosemite Valley, 1961.

Royal Robbins

Lure of the Impossible

In Europe climbers were taking Comici's concept of the direttissima to its logical limits, drilling their way directly up the overhanging walls of the Dolomites. The bolted "drop of water" line that was forced on many major faces culminated in absurdity in 1967 when Enrico Mauro and Mirko Minuzzo placed 340 bolts on the 1,500-foot Cima Grande north wall—on average, one every fifty-three inches!



French alpinist Gaston Rébuffat pendulums on the *Bonatti Pillar*, the Petit Dru, Chamonix.

G. Ollive

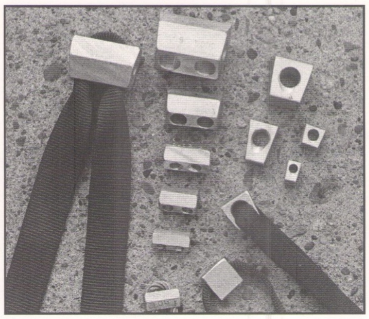
In 1971 Cesare Maestri extended the logic of drilling the impossible to its ultimate limit; he and his mates hauled a 300-pound air compressor and pneumatic rock drill for his climb of Cerro Torre. In one spot, a place where a previous British attempt weaved up exposed, natural cracks, Maestri simply drilled his way across blank rock for 300 feet to stay out of the wind! Like Comici with his extensive use of pitons generations before, many climbers could not resist going "gonzo" once the technology was embraced. Resistance to the unlimited use of bolts was quick. Besides Robbins, legendary climbers such as Hermann Buhl, Walter Bonatti, and Reinhold Messner all spoke out over the years against the bolting mania. Not everyone joined in, however. In Gaston Rébuffat's 1968 edition of *Starlight and Storm*, an inspirational text describing his finest climbs, he includes a well-illustrated tools and techniques section. Although he gives detailed lists of equipment, he never mentions a bolt kit. A blind eye to the topic prevented the loss of the lure of the impossible.

Since the introduction of the bolt to climbing, its use has always sparked intense controversy. Perhaps it is temporal, as exemplified by a new route on the Dru. In 1975 Thomas Gros soloed the big wall (with his guitar!) in eighteen days, garnering disdain from the climbing community due to its unprecedented (though moderate by today's standard) use of sixty-eight bolts. The route, and the controversy, was erased in 1997 when a massive chunk of rock fell above the mid-way point.

The Clean Revolution

While the rest of the world nailed spectacular walls, British climbers were patiently learning a less brutal technique of climbing, involving a novel method of creating a unidirectional anchor. With tradition running strong in Britain, the sport had evolved slowly from the days of climbing exclusively with guides. Serious peer disapproval regarding unnatural aid caused climbers to surreptitiously hide any such equipment in their packs. Aid climbing was derogatorily coined "steeplejacking," and the piton was a last resort, placed only in emergencies.

In the 1920s top climbers began pioneering a pitonless craft on the numerous short crags in rural areas. The most inspiring outings of the day were the "pebble routes"—the first examples of clean climbing. In 1927, Fred Pigott experimented with placing and slinging natural chockstones (pebbles he'd picked up on the approach) for protection and aid on the east buttress of Clogwyn Du'r Arddu, or Cloggy, in North Wales. His partners, tongue



Clog Nuts, 1968.

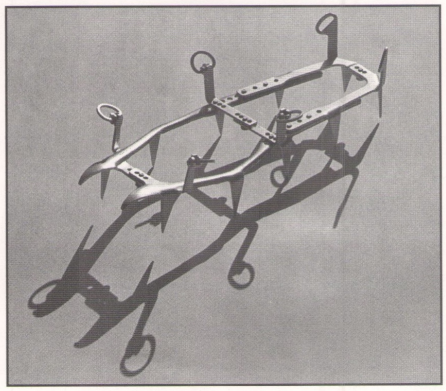
Tom Frost

in cheek, excused his deeds as acts of Providence: the rocks from below were somehow accidentally finding their way into the cracks and wedging into the constrictions! Soon pebble protection became an art form, and expert eyes searched streambeds for the right combination of rocks. In the late 1950s, as paths to the crags switched from streambeds to railroad beds, climbers began using machine nuts found lying by the tracks. Drilled out and slung, these soon evolved into custom-manufactured aluminum affairs known as "chocks" or "nuts." John Brailsford innovated a synthetic polymer chock in 1961, and, though these "Acorn" chocks were adequately strong, climbers preferred to trust their lives to the "Moacs" he later made out of the more familiar aluminum.

Hamish MacInnes's ice ax collection.

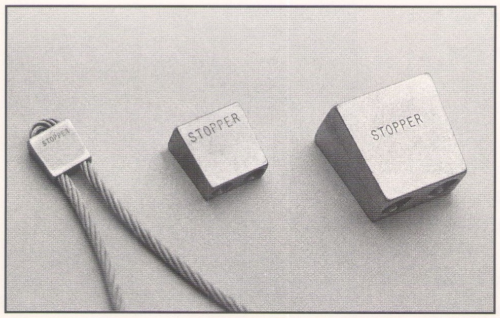
Ed Webster

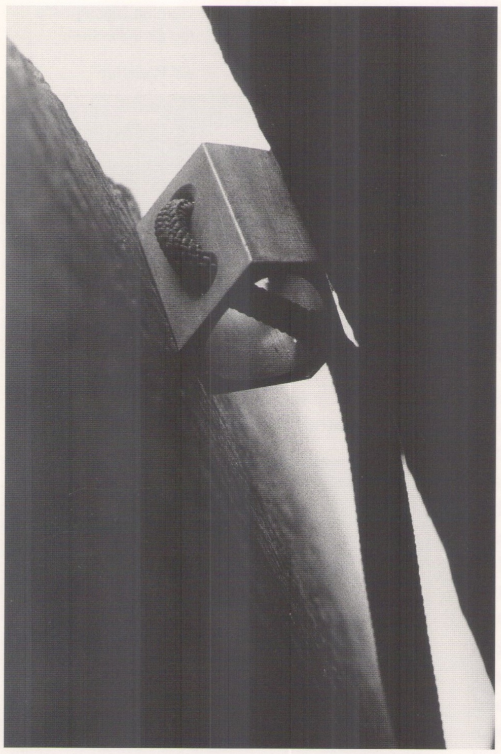
Soon climbers around the world discovered that with practice, patience, and cleverness, it was possible to climb exclusively with the new chocks. Royal Robbins, the leading proponent in the U. S. of the new tools, says of the late 1960s, "Climbers willing to choose a harder form of climbing brought themselves to a higher standard in deference to non-destructive principles. This was doubly good: chocks increased the challenge, and they weren't damaging to the rock." Customized shapes were soon produced to fit more and more cracks, with the engineer-and-craftsman team of Tom Frost and Yvon Chouinard leading the way. Chouinard, whose heroes were John Muir and Salathé, began blacksmithing chrome-moly pitons in the late 1950s, believing that removable pins were "cleaner," since they left less material in the mountains. In 1965 Chouinard joined forces with Stanford engineer Frost, who designed modern climbing production tooling, and Chouinard Equipment was born. The pair created the finest climbing tools ever made, including angle pitons, hammers, ice tools, and carabiners. During the successful climb of the south face of Annapurna in 1970, Frost got the idea for the first rigid twelve-point crampons while studying the tracks left in the ice by his mates. On his return, during a stop-over in



Rigid crampons and the classic grace of the Chouinard-Frost piolet.

Photographs: *Tom Frost*





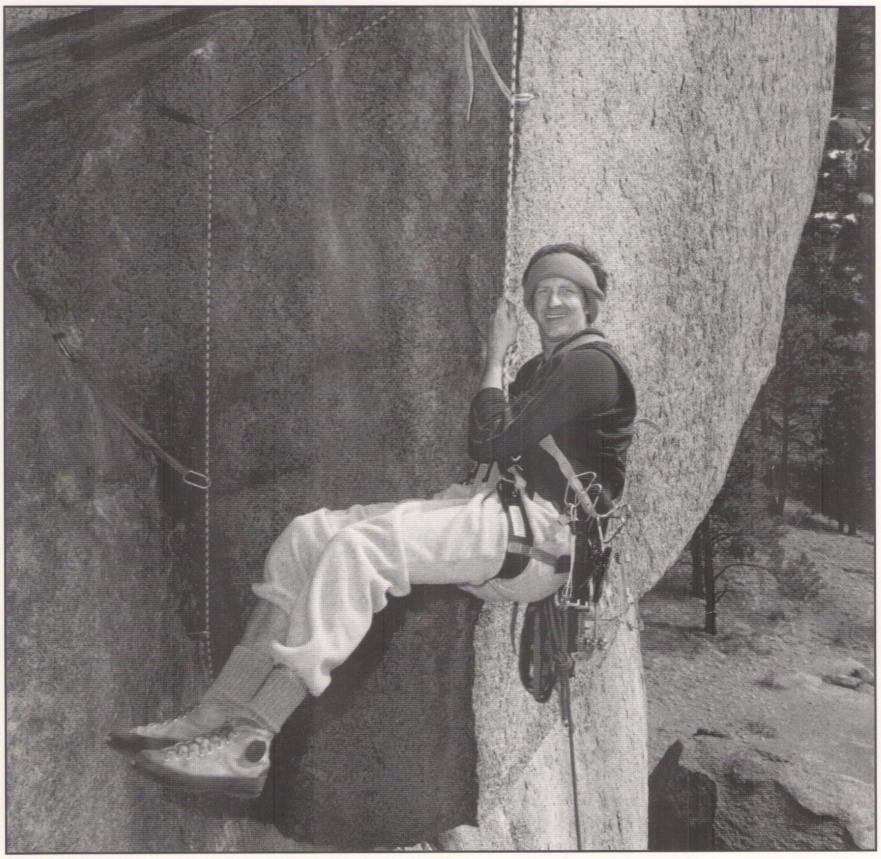
The tools that started the clean climbing revolution: the Stopper and the Hexcentric.

Tom Frost

England, he climbed with his team on their home crags, using the Moac and Clog chocks, then available only in limited sizes. When he returned home, he engineered a set of eight chocks with optimal tapers, coined "Stoppers," the first clean tools available for a full range of cracks. It was a big risk for the company, but with a clear vision of the future, Chouinard and Frost redesigned their tooling for the new clean equipment. Their major contribution to the clean-climbing revolution was the invaluable Hexcentric, co-patented in 1971, which made protection available even in parallel-sided cracks. These new tools profoundly affected the future of climbing. The combination of the easy-to-use chocks and their ethical/environmental correctness led, in a relatively short span of years, to the almost complete disappearance of pitons from the free-climbing scene, and their relegation to last-resort status on aid climbs.

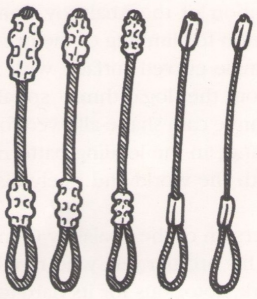
The first significant new route to go all nuts in North America was Royal Robbins's *Nutcracker Sweet* (5.8) on Yosemite's Ranger Rock, in 1967. But the clean revolution took some years to catch on, since ignorant or stubborn climbers used pitons on subsequent ascents. Most climbers who came to the game in the early 1970s didn't even own a hammer, and by 1975 only a few aid climbers carried and used them. Sensing that the willingness to bolt blank faces made the challenge of the mountains ring hollow, climbers took clean climbing to the limit. In the Shawangunks locals risked serious falls trying to avoid fixed pitons in order to earn a spot in the coveted "first clean ascent" registry at a nearby climbing shop. Here one could read tales of belayers perched on a tiny edge and anchored to a single lousy nut, with one hand gripping a carabiner poised to be clipped into the eye of a nearby fixed pin on the slightest sudden downward movement of the leader.

Meanwhile, other new tools were developed to make climbing more efficient. Ed Leeper perfected hook design with the invention of the arched base, and Clyde Deal, a park employee working in a machine shop in Yosemite, customized gear for the Camp 4 climbers, including the first "bashies," small blocks of aluminum with a hole for a sling or a wire. These cubes could be smashed into small pockets in the rock, but, unfortunately, once the sling or wire rotted or broke the piece was useless. Aid-specific software began appearing, too. With his state of the art sewn, fully-adjustable harnesses, vinyl-coated nylon haulbags, and single-point suspension hammocks (all design firsts), Bill Forrest pioneered technical ascents in Colorado's Black Canyon and throughout the Southwest. Forrest also evolved bashies to specifically sized "Copperheads," which enabled thin and shallow seams to be aid climbed without bolts.



Bill Forrest gear-testing at Sphinx Rock in Colorado. Forrest's many inventions also include the Pin Bin, the Daisy Chain, fiberglass-handled hammers, and the first ice tools with interchangeable picks—the Mjollnir ice hammer and Lifetime ice axe.

Bill Forrest collection



Copperheads.

The Far Ranges

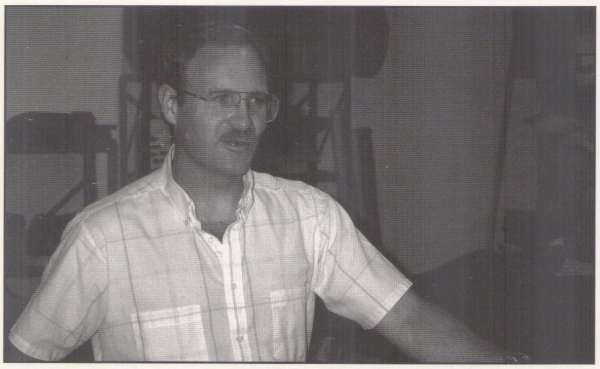
Charlie Porter was another gifted aid climber who had a penchant for tinkering. He manufactured early versions of a two-part adjustable climbing nut, custom wall harnesses, a hammock with built-in padding, and a variety of specialized nailing tools. With his mastery of tools and techniques, along with his irrepressible spirit, he soloed a new route on the huge and remote north face of the north tower of Baffin Island's Mt. Asgard in 1975. After spending over a month ferrying loads thirty-five miles from the outpost town of Pangnirtung to the base of the route, Porter spent nine days alone on this fearsome wall in freezing conditions, and another week getting back to civilization.

Lowe Tri-cams.

Always reticent about his accomplishments, Porter never published an account of his route, the most significant big-wall climb since Bonatti's climb of the Dru. (Porter had a certain flair: once, when asked for a topo of one of his El Capitan first ascents, he drew a vertical line on a napkin, wrote "A5" next to it, and gave it to his bewildered inquisitor.)

That same year British climbers Joe Brown, Mo Anthoine, Malcolm Howells, and Martin Boysen took a similar spirit to the Karakoram, where they attempted the unclimbed granite face of Trango Tower. Their first attempt ended partway up, at what is now known as the Fissure Boysen. They had only one large angle piton, and Boysen had to run out eighty feet of unprotected offwidth, at almost 20,000 feet, before placing it to insure that he was protected for the rest of the pitch. On the next move his knee jammed and would not come loose, and he spent hours fighting to free it, cutting his pants off in the process. He prepared to die as the sun began to set, but, as he finally relaxed, he popped out of the crack and was lowered to his concerned team. After the emotional drain of nearly seeing Boysen die a cold death, and knowing they were running low on food, they retreated. The following year they returned and completed the climb. Boysen took a second bong and managed the offwidth without any problem. At 5.10, A2 their route was not as technically difficult as Porter's A4 adventure on Asgard, but it was the hardest and most impressive technical route completed at high altitude, and it opened the door to big-wall climbing in the highest ranges on earth.

The Secret Weapon—Spring-loaded Camming Devices



Greg Lowe.

Photos courtesy of Lowe Alpine Systems

The next profound equipment change was the development of crack-camming devices. After an incomparable career of first ascents dating from the 1930s in the various ranges of the Soviet Union, Vitaly Abalakov devoted his life to mountaineering instruction, equipment design, and the promotion of international good will. Scrounging surplus aircraft materials, he made a variety of imaginative tools, including the first hauling pulley, the first adjustable tube chock, ingenious rope clamps, and titanium pitons and crampons. His invention of the Abalakov Cam was the first application to climbing of the principle of a constant-angle curved surface, with a cam shape based on the logarithmic spiral. Designed so that a load produces a rotational force, the logarithmic cam shape allowed for a single device to fit a small range of crack sizes without a change in the loading pattern, making it predictable and stable. Abalakov shared his ideas with the world and freely distributed information on the cam's design and construction.

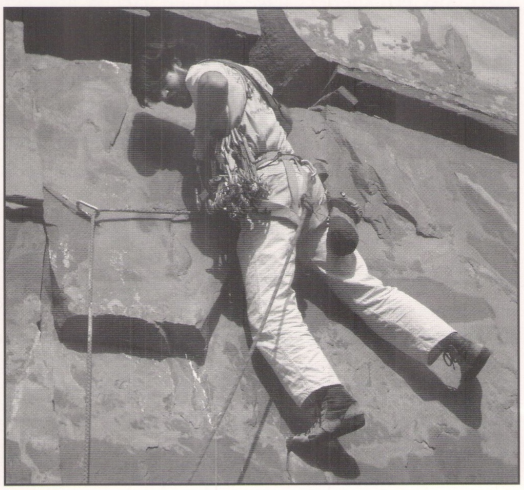
In 1973 Greg Lowe filed for a patent for a spring-loaded version of the Abalakov Cam, manufactured some workable single-cam units, and equipped his brother Jeff, who rapidly scooped some of the finest long routes in Zion National Park, notorious for its hard-to-protect, parallel-sided cracks. These early single-cam units had an elongated thirty-degree camming angle, which provided limited stability, and their use never became widespread.

Bill Forrest and Ray Jardine after an ascent of *The Yellow Wall* on the Diamond on Longs Peak, Colorado in 1969.

Bill Forrest

In 1977 Ray Jardine climbed *Phoenix*, Yosemite's first 5.13, with a new secret weapon. With an engineer's understanding of the principles of force and friction, Jardine designed a spring-loaded opposing multiple-cam unit with a more stable fifteen-degree camming angle and an innovative triggering mechanism. He kept his "Friends" cloaked in secrecy before his 1978 patent, and Yosemite was rife with rumors of Jardine's devices allowing for effortless protection placement on hard free routes. Before the commercial availability of Friends, a lucky inner circle of wall rats bought his initial limited production of the creative tools in the Camp 4 parking lot, subsequently saving vast amounts of energy on the taxing big walls.

As is the case with most technological advancements, the ethics of using Friends was a hot topic: did they make climbing too easy by taking the challenge out of placing chocks? Licensed by Jardine, Friends were mass produced in England and became instantly popular worldwide, to the point that soon there was no debate about their use. Indeed, for many climbers Friends, and their various descendants, became the very foundation of climbing protection and safety. And there is no question that spring-loaded camming devices allowed climbers to take a huge step forward in clean and safe ascents of both free and aid routes.

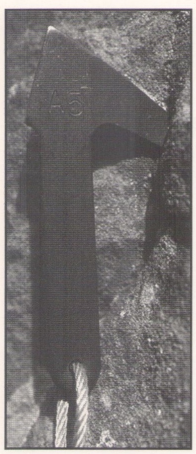


Evolution of the desert rack: Peter Williams at the base of North Sixshooter Peak in 1979; Ed Webster on the first ascent of *Star Dust Cowboy* (5.11), Castleton Tower, Utah, 1983.

Ed Webster (left) and *Chester Dreiman*

Mugs Stump relaxing in the first double wide A5 portaledge, Ruth Glacier, Alaska.

Steve Quinlan



A5 Bird Beak.

John Middendorf

Living on the Big Ones

Lightweight shelters have been the most recent advance in equipment for extreme multi-day routes. Evolving from Warren Harding's BAT (Basically Absurd Technology) hammock that could be anchored from a single point, the LURP (Limited Use of Reasonable Placements) tent was developed by Greg Lowe in 1974. Though lightweight, BAT hammocks were cramped and forced the inhabitant to lean against the wall, which in a storm ran with cold water. The precursor to the modern portaledge, the LURP tent solved the problem by adding a solid aluminum frame around the bed, keeping the inhabitants away from the wall. During its use on the first winter ascent of the northwest face of Half Dome, heavy winds and snow posed no problem—for the first time in the history of big-wall climbing. However, since it was initially considered a specialized tool rarely worth the weight, the device never made it past the prototype stage. Climbers seeking the comfort of a portaledge made their own. By the early 1980s portaledge use became popular with the somewhat more widely available one-person "Cliff Dwelling," manufactured by Mike Graham. Graham also produced a dozen two-person "Fortress" portaledges and equipped Hans Christian Doseth, Finn Daehli, Dag Kolsrud, and Stein P. Aasheim who made the first ascent of the spectacular *Norwegian Pillar* on the Great Trango Tower in 1984. (Tragically, Doseth and Daehli died on the descent when a rappel anchor failed.)

Portaledges allowed for a new level of comfort and safety on multi-day vertical ascents on big walls all over the world. Bigger and bolder big-wall routes are still being climbed without recourse to fixed ropes (and thus using less, not more, gear), and portaledges are continuing to evolve into more structurally solid, weatherproof affairs, such as the six-pound titanium A5 shelter used by Catherine Destivelle on her nine-day solo first ascent on the Dru in 1991. Modern shelters have allowed smaller and lighter teams to push standards of commitment on the world's biggest rock faces.

Today we see a continuation of the relationship between climbers and their tools. Helicopters have facilitated even closer access to the base of the big routes and have been used not only for the approach but also for the descent. Improvements in sticky shoe rubber have played a big part in changing attitudes toward free climbing on big walls. Improved insulating layers and lightweight weatherproof clothing and shelters have revolutionized climbers' attitudes toward bad weather. The adoption by climbers of the compact battery-powered masonry drill has sparked a huge advance in technically difficult free climbing, and the free-climbing skills so gained are being taken to the big walls.

Arguments about technology continue to rage. New equipment is invented each year, yet, at the other end of the spectrum, Lynn Hill's first free ascent of *The Nose* of El Capitan in 1993 proved conclusively that the route could potentially be climbed without any equipment at all. *The Nose* was originally ninety-percent direct aid, and Hill's climb was widely hailed specifically for its non-reliance on mechanical aids. But without the old piton scars, without fixed protection, without Hill's aid-climbing experience, without the extraordinary free-climbing ability she gained from bolted sport climbs and indoor gyms and competitions, would there have ever been a such a free ascent?

Xaver Bongard follows a strenuous 5.9, A2 pitch on the upper headwall of the Great Trango Tower during first ascent of *The Grand Voyage* (VII 5.11, A4+ WI4). Karakoram Range, 1992.

John Middendorf

The relationship between technology and climbing follows a traditional pattern. As each new technology develops, there is initial resistance. Some tools are rejected outright as not practical (like the Dolt Cart, a wheeled hauling contraption used during the first ascent of *The Nose*), some of marginal worth fade into obscurity (like the tossed grappling hook), and others are used sparingly until accepted with the new standard that is created. Generally, the element of risk is reduced with each new technological evolution. Detractors will speak out against the new ideas and push themselves harder to prove the lack of necessity of new tools. But eventually new tools become mainstream. Climbing challenges have always seemed limited as a resource, but equipment and training advances enable new and bolder challenges to appear. Is there a limit? One thing is certain: no one can predict future technology and the limits to the human will.

The author would like to thank Yvon Chouinard, Tom Frost, Royal Robbins, and the three Ascent *editors for their advice and criticism.*

Date: Thursday, April 30, 1998 2:35:49 AM
From: Steveroper
Subj: the end is in sight
To: DEUCE4

Okay, man. Thanks for bio. Highly impressive. I would have been more gentle with you had I known you were a Dartmouth/Stanford kind of guy. Anyway, I sent all this shit off to Webster today, so forever hold your piece. For your info, here's the bib for your article, played around by me for several days, with Cal Library, Neate, old AAJs, my Camp 4 records, and Amazon all taking part. And here's your bio, with a few additions by me. Anything more needed and we shall inform Webster. keep in touch. Now I'll try to paste bio and bib.

Selected Bibliography. Listed below are a handful of valuable sources, most of which were used in researching this article. For books cited, the year shown in parentheses is that of the publication of the original edition in the original language; further information is given for the latest English edition or reprint. The author would like to thank Yvon Chouinard, Tom Frost, Royal Robbins, and the three Ascent editors for their advice and criticism.

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JOHN MIDDENDORF began climbing in 1974 at the Telluride Mountaineering School, where he was able to sample Dave Farny's ample collection of mountaineering books. Inspired by the literature (including early issues of Ascent), he made the pilgrimage to Yosemite in 1977 and thrived on the challenge of his first big route, the northwest face of Half Dome. Realizing the need for improved tools, Middendorf combined his engineering expertise (gained at Stanford) and climbing knowledge to design and manufacture portaledges and other gear--and A5 Adventures was created in 1987. In 1992 he climbed the Great Trango Tower with Xaver Bongard. This alpine-style ascent, using the most modern lightweight tools, brought new standards of elegance, length, boldness, and difficulty to one of the world's biggest vertical rock faces. Middendorf has also done stunning new routes in Yosemite, Zion, and Baffin Island.

Biography for the original Mechanical Advantage published in Ascent. Later, Roper paid me a nice compliment in Rock&Ice: "The other day, chatting with John Middendorf, I realized that he greatly reminded me of Kor--both are giant men, superb climbers, and possess stratospheric energy levels." (Rock&Ice 87).

Contents

In the Beginning: Subtle Means and Engines
1

Ötzi the Iceman
3

18th Century Mountaineering
4

American Trail Builders, 1800's
7

The rise of iron for ascent
9

Rope Technology in the 19th century
13

Climbing Pitons Early Evolution--part 1b--Alpine ways and artificial aids.
23

Climbing Pitons Early Evolution--part 1c--Mauerhaken
28

Mizzi Langer -- first advertised rock climbing pitons (Mauerhaken)
33

Climbing Pitons Early Evolution--part 1d--the rise of steel and inline pitons.
36

Early ring pitons and the inline-eye piton design
39

Climbing Pitons Early Evolution-part 1e--Fiechtlhaken Design.
43

The “Last Great Problems” early 1900’s
51

Campanile Basso di Brenta
53

Eastern Alps Geography and Early Alpinism
59

Tita Piaz-Alpinista Acrobatico (Piaz PartA)
61

Tita Piaz-Speed Climber and Rope Acrobat (Piaz PartB)
69

Tita Piaz-Guide and Rigging Expert (Piaz PartC)
78

Tita Piaz, PartD--Big Wall Climber
85

Climbing Tools and Techniques—1908 to 1939 (Europe, PartA) Myths and Legends
93

1912 Fleischbank (400m) and 1913 Totenkirchl (600m)
101

Representation of Early Women Alpinists (notes)
105

Climbing Tools and Techniques—1908 to 1939-Aid Climbing Mastery (Europe, PartB)
116

Early carabiners
127

More collections and tidbits:
137

1930s Climbing Tools (Europe, PartC)
141

Mechanical Advantages in North American Climbing (Volume 2 to come)
159

Information Sharing
159

Appendix 1
167

A look at histories written in the 1930s.
167

Apologies for lack of index. The digital PDF is easily searchable and available at bigwalls.net

Comments on Mechanical Advantage

Thanks John, Mechanical Advantage is one of my favourite reads!
David Smart

Exceptional. This is important work.
Jim McCarthy

I love all your research, particularly the stories about lesser-known women climbers. I hope all this goes into a book or some other permanent form so future researchers can access it.
Katie Ives

Wherever your brain goes always seems to be interesting to me.
Amy Givler (my sister)

Invaluable.
Christian Beckwith

In many fields, such nuances and specifics are where the substance is found. Keep up the great work.
Eric Doub

John, Another out-of-the-ballpark story. Your write-up and history such a great contribution, especially because it includes French, Italian, and German sources.
Sallie Greenwood

Thanks a lot for all that amazing work of research! i confess i wait for your emails with great expectation. so thank you! - genofoto from catalonia, spain.

Great source of information. Thank you for this great job and for sharing with us.
Rosangela

Cover: Xaver Bongard on the Swiss American Route, Zion National Park